CLASSIC TOY TRAINS

O and S gauge for the operator and collector

INSIDE! 80 TIPS

EXCLUSIVE

LIONEL'S ICONIC ARTIST

ROBERT SHERMAN DREW OUR DREAMS

EASY DIESEL SERVICE PLATFORM ..

LIONEL'S FAB FOUR FOR 1957 ..

VISIT A STELLAR FLYER LAYOUT ..

KATO

PRECISION RAILROAD MODELS

EMD SD70MAC

GE P42 "Genesis"

New Delivering

EMD SD80MAC

EMD SD90/43MAC

Superliner and Material Handling Car (MHC) Sets

EMD SD70MAC

Last chance...

To get a FREE RDC model!

KATO U.S.A., INC.

ExactRail

The Next Generation of Model Railroading

Rolling Stock Perfection

Greenville 60'
Plate "F"
Box Car

HO SCALE

Johnstown America
AutoFlood II
RD Coal Hopper

HO SCALE

www.ExactRail.com

866-943-1781 (toll-free)

CUSTOM MODEL PRODUCTS

World Wide Distributor of 1:22 Scale Models (Standard Gauge)

IMPORTER OF MUSEUM QUALITY MODELS

Diesel Engine Collection

Please Visit Our Recently Updated Website at:

custommodelproducts.com

For Complete Selection

Connect Us for Best Pricing!

TOLL FREE: 800-443-8567 ph. 925-687-3580 • fx. 925-687-3581

2-8-8-2 USRA MALLET

Don't get left behind!
They are moving fast!
Get your Aristo-Craft 2-8-8-2 USRA Mallet
before it gets away!

Road Names
ART-21600 UNDECORATED - U.S.R.A.
ART-21601 PENNSYLVANIA - U.S.R.A.
ART-21602 SANTA FE - U.S.R.A.
ART-21603 UNION PACIFIC - VANDERBILT
ART-21604 RIO GRANDE - U.S.R.A.
ART-21607 NORFOLK & WESTERN - U.S.R.A.
ART-21609 BALTIMORE & OHIO - VANDERBILT

Additional runs: (New Road names)
ART-21605 CHESAPEAKE & OHIO - VANDERBILT
ART-21606 SOUTHERN - U.S.R.A.
ART-21608 SOUTHERN PACIFIC - VANDERBILT
ART-21610 GREAT NORTHERN - VANDERBILT
ART-21611 BURLINGTON (CB&Q) - U.S.R.A.

MORE ROADNAMES TO COME!!!!

Nickel-plate Traction Type Scale Wheels
Each road name available in 2 road numbers
ART-21600 Big Boy Grande 1 road number with grease tender
1 road number with stoke tender

SEE YOUR FAVORITE ARISTO-CRAFT DEALER!!!

The 2-8-8-2 USRA Type Mallet is the latest steam locomotive yet produced by Aristo-Craft. With its massive 2-8-8-2 wheel arrangement the Aristo-Craft Mallet is a wonderfully huge locomotive. The Aristo-Craft Mallet looks great on a big layout with generous curves yet will be at home on railroads with 4 foot diameter curves. Built on a pair of our proven 4 Point Blower gearbox equipped motor blocks first used on the highly successful Aristo-Craft 2-8-2 Mikado, the Aristo-Craft 2-8-8-2 USRA Type Mallet has raised the bar and created a new standard for all G Scale steam locomotives.

POWERFUL MOTOR BLOCKS & PATENTED POINT MOUNT BALL BEARING EQUIPPED GEARBOXES WITH LATERAL & VERTICAL MOTION | MOTORS WITH BUILT-IN FAN, FLYWHEELS & CAST METAL ARMATURE AND DRIVE HOUSING
PLUG & PLAY PC BOARD 5.1 C, A/C SOUND & BATTERY READY WITH SPEAKER
WITH SOLDIER LIGHTING SYSTEM WORKING HEADLIGHT AND BACKUP LIGHT | LIGHTED NUMBER BOARDS AND CLASS LIGHTS (CONVENTIONAL LIGHTS)
TRADITIONAL AUTO SMOKE SYSTEM WITH HIGH VOLUME SMOKE AND BURNOUT PROTECTION
REALISTIC PAINTING & DETAILING HIGHLY DETAILED BODY WITH GENERATOR APPLIED PLASTIC AND BLACKENED OR PAINTED BRASS DETAIL PARTS
9' MINIMUM DIAMETER CURVE REQUIRED

WELCOME TO THE NEW WORLD OF LARGE SCALE TRAINS!

ARISTO-CRAFT TRAINS
698 E. 2nd Street Irvington, NJ 07111-4428
Phone 973-374-9600 Fax 973-374-9700
http://www.aristocraft.com aristotrains@aol.com

All Aristo-Craft Trains are sold with limited warranty against defects in material and workmanship.

New Body Style!

56' General Service Tank Car

American Car & Foundry
Road Number ACFX 67351

Learn to add scenery the easy way with Woodland Scenics

Get started today with these four learning kits!

Buy all four Learning Kits and become a model scenery expert!

Railmodel Journal Staff

Publisher: [illegible]
Editor: [illegible]
Regular Contributors:
[illegible]

Art Director: [illegible]
Graphic Design: [illegible]
Circulation Manager: [illegible]

Contributions: [illegible] **Reuse:** [illegible] **Reprints:** [illegible] **Reader Comments:** [illegible] **Disclaimer:** [illegible] **Advertising Opinions:** [illegible]

Advertising Director: [illegible]

Advertising Policy, Editorial Aspects: [illegible]

[illegible]

RAILMODEL JOURNAL

How YOU can do it BETTER

June 1995 Volume 1, Number 1

Table of Contents: "The Journal"

All Scales All Scales

Operations
[illegible] 10
[illegible] 20
Scale Forum Review: [illegible] 7

Plans
[illegible] 15

Techniques for Better and Easier Modeling
[illegible] 18
[illegible] 22

Scene Detailing Methods
[illegible] 11

HO Scale HO Scale

[illegible] 30

Track Plans
[illegible] 13

Locomotives in Action, Train Emphasis
[illegible] 26
[illegible] 32
[illegible] 34
[illegible] 35
[illegible] 36
[illegible] 40
[illegible] 42

MICRO-ENGINEERING Wheelsets "Details You Demand"
[illegible] 31

Freight Cars
[illegible] 16
[illegible] 24
[illegible] 41
[illegible] 48

N Scale N Scale

[illegible] 50

Track Plans
[illegible] 51

Scene Detailing Methods
The World Outdoors in Scale: Tree-Modeling Techniques 47

O Scale O Scale

[illegible] 46

G Scale G Scale

[illegible] 8

Departments Departments

[illegible] 49
[illegible] 2
[illegible] 5
[illegible] 28

On the Cover: [illegible]

Prototypical or freelance?

Most modelers approach their work in one of two ways. They either build models of existing (or historically existing) railroads or operations (called prototype modeling) or they build models of made-up or fanciful railroads to equipment (referred to as freelance modeling). Each of these approaches has its pros and cons.

In the smaller scales prototype modeling is much more common than in the large scales. People still model a favorite railroad, often at an approved display, a location two of its customers, and a prototype date. This type of modeling, when done well, is rewarding, requiring large amounts of research and a high degree of modeling skill to capture not only the essence of the prototype, but every visible detail as well. Every modeling decision is prescribed by what actually was. Certain minor liberties can be taken, but these must be carefully approached with thoughtful control if credibility is to be maintained.

The results of this prototypical modeling can be astonishing and the finished work is of such museum-like concentration that even examples of excellent model railroading have become accepted illustrations of deterioration. This type of work is authentic and its enthusiasts find a strong sense of history as reflected by a particular railroad, place, or piece of equipment and this shift patterns and deliveries of long-term projects or missions.

Freelance modeling, on the other hand, is an individual assignment. The don't-do boundaries. You can freely combine rail or scale-up railroad ideas to encourage layout or loft new practice and then to the unrestricted accept by indistinguishable from a prototypical line. Or, at the other end of the spectrum, you can build a railroad that has little relationship at all to actual railroad practice and therefore toughest personal fragrance and railroading ideas that are impossible (in the full-size world) could through some straight can of no-cross choices. Freelance modeling is the freedom of the country mind.

Many people in the garden railroad or actual railroad to their own rights, only could adopt a modular approach to freelance modeling. Using this as even common, anything goes and be value changes. You are no longer building models of full-size equipment, either real or imagined. You are making models and rolling stock for use on your line that never exists (the requirements of the railroad). Limited has no boundaries to not be left off. There now rules or different shapes or proportions.

When viewing garden railways I like to see both examples. What explains some to me, though, is plausibility. Could it actually have existed somewhere? Does it make sense even of areas? Does it work together as a whole? Satisfying at least one of these could make a suspension. Whether your railroad is freelance or prototypical, plausibility is a necessary component of credibility.

So the choice is yours—freelance or prototypical. It is depends upon what you are, some preconceptions and likes, and the goals you have set for yourself. The important thing is to give a little thought and come up with the answer that's right for you.

3800 Horses on Your HO Line

RAILROAD
September 2004 trainsmag.com
NEWS & PHOTOS

On May 23, CP's Soo Line-liveried steam dynamo, with Kansas 4-4-0 #539 leading the way, rounds a curve through Rosemont, Ontario.

In the upper Midwest, it's a steamy summer

After a stint in Canada (left), the CP's 4-6-4, Milwaukee 4-4-4 No. 261 joined the Grand Excursion party.

Beginning with a swallow-flight-to-Capistrano Soo Line 4-6-4 #1, anchored for the Grand Excursion 2004, and ending with the sixteen of CP's Empress and Princess 4-6-4s sharing an Calgary big-steam-and-fairly-on-the-high-iron in a big way in Banff, summer 2004 was a pretty big one from August to previous herself as Trainsmag fan.

Latest updates at Trains News Wire
TRAINS

a cycle. May: CP's 4-6-4 #29 made a 17-day, 1,800-plus-mile circle-excursion visit that culminated in Montreal on May 30. Then was my first passenger train to cross the mighty behind steam in an over 50 years, and possibly the first ever to do so behind a single steam locomotive. (Yes, there CP "heritage" diesels — CP 8713, 1988, CP 1401, and CP 1988 — did go along.)

Subsequent trips for—don't to duck behind an oncoming Canada and on CP's Soo Line in the upper Midwest. a Soo 2002-turned-4-6-4 Milwaukee Road's 4-4-4 No. 261 Chicago on a 975-mile package flights in positive the Soo Line to Minneapolis-St. Paul for an appearance in the "Grand Excursion 2004" at CP's Pierz heritage display, and the Grand Excursion for one luxury locomotive was hauled on BCP Rose 600-mile "classic from Montreal to Windsor to Hoffman Estates, Ill., to Ft. and returned to Calgary apparently to begin the supply of CP units.

Grand Excursion 2004 was a series of local-city events in Minneapolis-Rose scenic from the Head Lakes (Superior) and Bentonville) from Rock Island and Mr. Soo, Ill.—to Minneapolis-from a train marking the 150th anniversary of the original "Grand Excursion."

That train was not a celebration August by the Chicago & Rock Island to mark its completion of the first railroad to the Mississippi River from Chicago. A special Chefs train hosted 1,200 people — mostly railfans, retired businessmen including former Presidents Willard Gilbert — who commuted north to Rosemont to St. Paul-Minneapolis.

Numerous members and riders shot—and parts—I joined in the countryside, but

Milwaukee Road 261 runs by Wauwatosa (Wis., dtn., at mile 10 on the Green Bay Division (MP) pushing cars from Bensenville to Milwaukee, en route to Chicago. It was the F-7 A-B-A's first run across multi-crafted Wauwatosa on the 4th time and was restricted to 1960.

the rest of the ordered units and was Minneapolis-based Milwaukee Road 261 receiving on its 11th motorcar first towards steam construction the 4-6-4 at launch from the Grand Rapids Museum at Grand Rapid, Mich.

Beginning June 19-21 with a public ceremony once via the CP 1974 — from Minneapolis in Chicago can be more old former with cars owned by CP — the 261 began an period of the United Co-operative ships handing on 10 car runs from Chicago to Rock Island on June 21. The 261's train were made under Amtrak authority and 940 people were along to provide the necessary food and power on the passenger cars.

For years of upcoming museum, the Chicago-Rock Island opened more no-handling 30, as Working the Northern Route 4-6-4s result of the old Rock Island was Even Interstate. The railroad did how not co-ordinate, however, as how [illegible] Rock Island to the

[illegible]

Joseph E. Warwick, [illegible]

Joseph E. Warwick, 71, a longtime owner of the roundhouse railroad by Saturday, [illegible] June 21, 2008, at his home in Philadelphia, Miss. Warwick was an Ohio native and the Penn veteran who got a job at a railroad church administrator at [illegible] Rock, Lake Erie & Western tourist line in the late 1970s and early 80s. The [illegible] operated between Grand Rapids and Walnut Hills, Ohio, between each of the Clover Leaf division of the Warren Peak. Lewis Gilmartin and his wife, Frances M. Warwick, moved to Aurora, Colo., and formed [illegible] Rail Car, a tourist rail consulting firm. From 1970 to 1980 Warwick added Hunters, the most memorable of the Young Railway Association inc. [illegible]. He also was co-director of [illegible]'s board of directors for many years, as well as the Rocky Mountain Railroad Club and the Railroad Model Railroad Association.

[illegible] Rock Island's [illegible] 261 [illegible] 1974 [illegible] 261 [illegible] 1974 [illegible] 261 [illegible] 1974

RAILROAD NEWS | PRESS

UP defends trademarks

Suit names two model railroad manufacturers

Union Pacific in June filed a complaint in U.S. District Court for the District of Nebraska against model railroad manufacturers Life-Like Products Inc. and Athearn Inc., model railroad manufacturers who, according to the UP, have refused to cease their licensing agreements, the most controversial use of UP trademarks.

The complaint alleges claims of infringement of federally registered trademarks, trademark dilution under federal law, Unfair Competition under Nebraska Uniform Deceptive Trade Practices Act.

"Union Pacific believes it is important that it defends its trademarks against unauthorized use by [Life-Like and Athearn]," the railroad said in a statement on its corporate web site about the court's ruling. "Both companies have voluntarily executed Union Pacific's model licensing programs."

UP says the two companies failed to honor one of UP's licensing requirements, but they have retained unreleased promotional items for previews and models featuring UP's iconic Armstrong Veranda car. Violating these terms is a "breaching and advertising campaign."

"Union Pacific understands it could face a very quick licensing program that pressures its core model brands," the railroad said. "It is [UP's] job to protect what Union and Athearn believe they can about the two, while saving those who refuse [manufacturers], including those model railroad manufacturers, have to respect their trademarks. Pacific produces at present terms with the law."

Lawsuit launched comments and Athearn couldn't be reached for comment.

While Union Pacific is currently counting the most profitable on its licensing program, other railroads, including Burlington Northern Santa Fe and CSX, are implementing similar licensing agreements. Besides applying for a license, cross with a quality product, a manufacturer has required to submit and receive art approval.

Jim McMillan of McMillan Publications, a company of calendar producers, applied to UP for a license at the a decision of the Union Pacific calendar. So, [name] has asked Athearn to ask for use on UP because he said he continued with how it would use its brand.

"They didn't give me an explanation why not," said McMillan, who added that he can't work Chevy pickup for a licensing agreement to do is Northern Pacific or a Missouri Pacific calendar and received approval, but he wasn't interested in doing so at this time. His 2008 UP calendar, which was to incorporate features the current licensing agreement, is now in limbo, and he has not ordered it.

"I usually have an calendars sold a lot and most are," said McMillan. He is subcontracting a "Fallen Flags" calendar for the 1st Battalion UP, which he has published since 1996. The new calendar has an image based of "the angle — in Trinidad — of the locomotive Valley Flag."

"Developing Southern Pacific is trying to get its licensing program going," McMillan said. "They told me at this point that working as I have a license, a BNSF calendar is OK, I still think."

— Jerod Long

VIDEO

Videos 1 to 9 of 9

[redacted]

Two Outstanding New Books from Signature Press!

Rails Around Lake Tahoe, Mallory Hope Ferrell

Lake Tahoe lies near the eastern crest of the Sierra Nevada, along the California-Nevada boundary. Its nine railroads (each all narrow gauge, most logging lines, delivering some summer and weekend tourist traffic at intervals on the 12 miles of water) at Virginia City, Nevada and Truckee, plus the scenic 22 miles around the lake, its logging trains, bigger in Reno, it was recognized that narrow was the most appropriate for development around the lake. It these narrow gauge railroad was built, in common with the mainlines Pacific at Truckee, and hung onshore to the lakeshore, and was nonetheless carried trains around the lake. In 1939 the SP acquired and standard gauged the line, and finally abandoned it in 1950. But the story of the steam trains and locomotives is a vivid part of Lake Tahoe's history. 256 pages, 250 photos, 15 maps and graphics, endnotes, bibliography, index. **Price: $40**

Union Pacific in the Los Angeles Basin, Jeff S. Ames

Union Pacific was a latecomer to Southern California, not arriving until 1905, at a point known as the San Pedro, Los Angeles & Salt Lake Railroad. But the history of the part of the UP is complex. It is all here, from the predecessor railroads, through Hagenbarth, and land grants, to mergers and acquisitions, including many complications at the ports of Long Beach and Los Angeles. Also fascinating are the refinery trade routes for Pacific Electric and Southern Pacific. This book will be of great interest to UP fans and those interested in Southern California history. 272 pages, 160 photos, 40 maps, 100 graphics, bibliography, index. **Price: $50**

Free shipping, domestic individual orders
$5.00 shipping for foreign individual orders, 2 copies $10
California residents add 7.75% sales tax per book

we can mail you for information on all our books

SIGNATURE PRESS

Order securely on www.signaturepress.com
or write Dept. C, 5248 Olive Hill, Wilton, CA 95693
Phone orders may be placed using check or
credit card
1-800-451-1943

Jim Phillips
Publisher, Trains

Keep TRAINS on the cutting edge of railroad journalism

A plea to the new editor: Keep the light burning for railroading's present and future

Last month I wrote that the new Trains editor will need a key formula to the story, including the spot with consideration for a large number of Trains readers who are of the Class I steam locomotive. I said it would be a serious mistake to forget that thousands of Trains readers still remember the era of big-time steam, or we talk down to us.

It's true, of course, that we're excited to have Chief when pictures of the last standard-gauge U.S. Class I steam locomotives dropped their fires for the last time in regular service.

This month, I want to talk about something far more important: the need for the new Trains editor to keep the light burning for Trains' dedication to the present and future of real, practical railroading.

But we know that our advice might be readily accessible. The new Trains editor might well be very serious railroad fan with the same enthusiasm as your editors. However, I will even venture to guess that if, along with many others, you are watching the transition with great interest.

Trains has long crafted a lighthouse between you as fans and real railroaders. Its mission, "An magazine of rail reading," Trains must continue to walk this lighthouse. (A while back in Trains editors, I deliberately used the word "lighthouse" instead of "beacon" because I thought it was a more descriptive word.)

The future is of more than marginal importance to the U.S. railroad world. Trains are taken as an authoritative and respected voice for rail railroading. Magazines such as Railfan, but they clearly delve into aspects related to the real world of railroad railroading, and history magazines such as it's ever. Trains, the Railroad & Locomotive Historical Society's flagship, and the specialized, group publications such as Railroad Model or Railroad Model Craftsman's the magazine for a wonderful job of going very depth on railroad history, areas of railroading. While the magazines I mentioned are more narrow-outline reads, such as there are good places one for sure.

But only Trains attempts — and usually succeeds — in covering the whole range of railroading with a credit card, practical mind. The editors, in-depth pieces of Trains' primary news analysis and knowledgeable platform, etc.

Words that every Kalmbach reader should be very familiar with. Trains is a cheerful reflection of interest of other hobbies as well, despite others compared as a result of what

RAILROAD HISTORY

Engineering Railroads Your Hobby, Video Works, Parts, Repair. Call & Talent 818 247-3000. Fax 818 419-9494 21804-A Oxnard St., Canoga Park, CA 91303 http://www.buyrighttrains.com

Triumph VI

VOLUNTEERS WANTED

New Book!
Warbonnets and Bluebonnets
by Jim McMillan
The Last Three Decades of the Santa Fe in Texas

McMILLAN PUBLICATIONS, INC.
9968 West 70th Place
Arvada, Colorado 80004-1643

Southeastern Railway Museum

2nd Annual Railfair

April 3rd & 4th, 2004

Saturday: 10am - 5pm; Sunday: noon - 5pm

Rail related arts, crafts, collectibles & more

Music by the TJ Cadenza on Saturday

Food & refreshments both days

Train rides on restored caboose

THE AMERICAN LOCOMOTIVE COMPANY

A Centennial Remembrance

See your dealer or order online at www.centrackpublishers.com

CenTrack Publishers, LLC

717-469-1508

If you love Standing Rail Road

EXCLUSIVE ITEMS

Empire Builder marks 75 years

Amtrak President Stephen Gardner, center, and John Hyde, left, and Mark Rohrer of Burlington Northern Santa Fe Railway, stand in front of Amtrak's Empire Builder at Seattle's King Street Station on June 11 in observance of the train's 75th anniversary. Amtrak's Empire Builder, which runs between Seattle/Portland and Chicago, was launched on June 17, 1929, by the Great Northern Railway. Amtrak took over the train in 1971. (Photo courtesy of Amtrak)

Carbuilders going strong

NAC, Greenbrier, Trinity Tank see growth

In Canada, traditional railroad customers are a great source of railcar business. Things are even looking up in freight railroading.

In Canada, National Steel Car said it sold 1,500 railcars over the following three months as it "struggled to keep up with a soaring North American railcar demand for new freight cars," according to a story in the Toronto Star.

"We have seen a strong rebound since 2009," Rob Ellwell, the firm's chief operating officer, told the newspaper. "We're booking orders for the second quarter of 2011 already."

NAC ordered in mid-'10 welders, plate cranes, new paint shop and bunkhouse, which would bring its total employment to 1,700. NAC manufactures all types of cars except tank cars and coal hoppers.

Meanwhile, Greenbrier, U.S. headquartered in Lake Oswego, Ore., said it had received orders for nearly 7,000 cars in fiscal 2010, raised its 2011 outlook, predicting the completion of fourth quarter deliveries would mark a 70% double-digit increase over 2010. It also said new orders were concentrated in intermodal units and tank cars, also noting that it had received orders for 1,000 boxcars.

When approved, the FTA project would be the largest single-vessel transportation investment ever by any port, which pushed the Texas coastline of South Americas and third-busiest hauling in a record 10,000 grain railcars in 1997 addition, up from 9,700 units, valued at $400 million, the previous record.

As Myers orders are 250 container flatcars approved by the Iowa Traditional Wheels owned business, to be built by Greenbrier's Portola Rail Manufacturing facility. Wagner Holdings, acquired in 1999.

By Oregon Trinity Tank Car Co. said it will build a new manufacturing facility near Richmond, Va., that will be built by 2012. Until its date to build up to 70 tank cars a month and employ up to 100 people. The plant will be in the plans. Parent co. a 140-million-year-old agreement for the Trinity and 2 companies worked on the rail of an old car that

[illegible]

U.S. Southwest Rail Railroad [illegible] Texas, to operate a railroad. Greenbrier Railroad, [illegible] owns and operates the [illegible]

U.S. Burlington Northern Santa Fe plans [illegible] [illegible] Texas, and [illegible] [illegible]

U.S. Amtrak Cuts [illegible] Amtrak [illegible] [illegible]

U.S. [illegible] [illegible]

U.S. [illegible] [illegible]

U.S. Metro Rail [illegible] **Missouri North Central Railroad** [illegible]

U.S. The Ski Country Association of Governments, [illegible]

U.S. Norfolk Southern [illegible]

U.S. Progressive Rail [illegible]

U.S. [illegible] [illegible]

U.S. [illegible] [illegible]

U.S. [illegible] [illegible]

U.S. [illegible] [illegible]

U.S. [illegible] [illegible]

U.S. [illegible] [illegible]

U.S. [illegible] [illegible]

In addition to our unique decoders, we've recently announced many of our HO die cast locos sold features never before available. Here's a taste of what sets MRC decoders now offer.

Our Synch ENG control automatically adjusts. Or if you prefer, you can make your adjustments manually.

Until now, we reengineered sounds only delivered a consistent RPM sound. Now, the popular prototypes we've enhanced the air compressor sound on our diesel decoder so it's in synch with the RPM of the prime mover. Depending on loco type, use the decoder when synched or non-synched to the prime mover. This is unique to MRC decoders.

Only our MRC decoder puts authentic braking system and synchronized sound together. We've added real-life, service braking control. Apply the brake, it will progressively slow the loco. Simultaneously, brake squeal will be activated. Stop applying the brake, or come to a stop, the squeal turns off.

Our new, Dynamic Braking feature. Hitting Dynamic Braking (DB) not only slows the loco down, but activates the appropriate sounds. Hear it now the cooling fans come on to cool the resistor grid, the engine revs down and the noise drop as the loco slows.

The first sound decoder to replicate the sounds of three prime movers in a full-size Baldwin Loco. Decompiled for an HO Gandy loco, it's the sound of three prime movers going on one toy one. From idle to a thundering, full-throated rumble. And like the prototype a short down after no been on idle for a while.

Lighting control... 11 of them. Our decoders now offer 11 lighting options, including gyra lights, ditch lights, mars lights, strobe lights, oscillating beat lights, on-off, dynamic. Rule 17, dim dright-off cycle, cabin lights and more.

Sharper Sound. When pronounced prime mover resumption and out of synch RPMs from your dual monaural & But When one prime mover's bell and horn sounds to emanate from the front speaker and the second prime mover's sounds to come from the rear speaker? Then try the new MRC SOUNTECH drop in sound decoder for E 8s. Comes with rear speakers.

To learn more about MRC sound decoders, visit us at:
www.modelrectifier.com

MRC Model Rectifier Corporation

A faster *Downeaster* . . .

but not during the Democratic convention

Classy E9

HONEST VALUE!

Ed Walton

Tallahassee, FL

SPV's RAILROAD ATLAS

$26.95

NEW!

Lowest Prices!
www.SwitchCrafters.com

ProTrack™ ProSwitch™
ProSwitch R7
Finally a high-quality large switch that works out of the box. Always!
Why would you settle for less?

The Advanced NCE Corp. GBRev™ Pro Cab Wireless Control System
Simple DC/DCC GBRev™ and also AirRev™ Plug-In Sound & Control Upgrade for your Aristocraft™ "G" Scale Locos!
QSI
QSISolutions.com
(800) 671-0641
Dealer Inquiries Welcome

There *is* life after Amtrak for retired F40s

Commuting fleets for freight-only service requires some work, however.

A repainted Amtrak F40 sits in line for Caltrain service at Milpitas, Calif., in 2005.

D.C. 3207dB prototype unit tests at Pueblo

EMD "aces" a sale to Montana Rail Link

How do you get a passenger train to run on time?

Midnight sun will shine on new dome cars and rail services in Alaska

Solution.

KONI RAILWAY

ITT Industries

The Emerald City's $2 billion bet

Seattle's 14-mile system could alleviate commuter woes, but can the city pay the hefty price tag?

The Sound Transit Green Line Expansion Phase Project might look like a new system

At nearly $2 billion, the Seattle Streetcar's Project is the most expensive rail transit project in the country per mile. Its goal is a 14-mile system connecting the suburbs of Bellevue and West Seattle with downtown. Each car, which are presently undergoing "dual-gauge" tests for the coming 1.3-mile Capitol Hill–South Lake Union Link, Seattle's first "true" streetcar, will be traveling on an already busy corridor, using part of the existing right-of-way. And it's having a huge impact.

Estimated in 2002, the streetcar's operating costs alone come to an $18 million annual subsidy, or $36 per rider. The streetcar fares cover no more than 30 percent of the agency's operating costs, and the agency is unable to raise fare revenue because of Seattle's Initiative 695, which requires voter approval for any tax increase. Sound Transit's streetcar bonds are backed by sales tax revenues, property taxes and motor vehicle excise taxes. Each of these sources is projected to grow at a rate of 4 percent per year, but the streetcar's costs are projected to grow at 5 percent per year. Over the next 25 years, the streetcar's costs are projected to exceed its revenues by $1.2 billion, and the agency could pay out as much as $1.7 billion in interest alone — for the total of $3 billion.

"There's nothing about moving people," says Sean Ferguson, Michael Meckler. "Why is a metropolitan moving [and] transit?"

In spring, Meckler raised concerns at least Seattle Mayor Greg Nickels' office, saying the Seattle Streetcar Project presents that the streetcar would be inadequate to meet commuter needs.

"[The project] is the most unused streetcar in the country," said Meckler. "They have the authority to raise rates. The question is, can they use it well?"

In a letter, Nickels' transportation director Peter Hahn countered Meckler's claims, arguing that the agency's projections about the aggressive growth target — and about the potential ridership — "are based on the best information available at the time," Hahn wrote. Hahn also noted that Seattle's Office of Economic Development had projected that the city's population would grow by 200,000 people by 2040.

Transportation Director Patrick Green, and Project's Director of Finance and Administration, defended the agency's revenue projections. "Seattle has made some improvements that are very, very successful in land value, why he didn't come and talk to me."

Bureaucrats Meckler: "We've seen with [the streetcar] project, recently [we've] called and asked for an update on ridership. [What matters] are the numbers."

The troubling news is important because the agency isn't seeking federal funds for the project. Says Meckler: "We did not ask for [them]. We wanted to try to do this as a different way."

And "different," the project certainly is. In a spirit of the traffic concerns that

Coney Island goes upscale

Still, Brooklyn's $200 million Coney Island Boardwalk project has been a success, with more than 75,000 square feet of retail space, and two additional

City Rail briefs

Landscape your buildings — make them speak up!

1. "Are we ordered yet?" might be what Fred Harvey would want to hear in any Fatima salon under the gentle or the elegant Fred Harvey Hotel while waiting for Lola and Lorrie Hickey — Lorrie is in Western Railroad, a short borrowed (Acorn 4) timber the entrance and Ellie Hyrne (Hyrnes acquiline 'Ellie' (Lorrie 4-5) spanish can for a an area here. Lola coordinate a care complete the measured Lorrie 3 landscape

When we plan landscape here in our Fat Mountains? Each mountain window a finding for a gorgeous, the folks who might live in small doors, and a bit about the history that occupied on the pavement, as Harvey **photo**'s Fiber his sessions was lucid and entertained to "terraces on the walls." All of the buildings shown here are good examples of how the surrounding landscape can impact visitors. The landscape and planter choice will reach maximum while blending it into the whole scene. Let's get to the business of this subject.

The business

Begin with the Fred Harvey Foundation. A good foundation will accomplish three of goals, including stability from moisture, insect deterrent by limiting of the structure and to extend again our efforts to create this building when improvements or storage.

For strong, level foundations, excavate 1–2 ft beneath the estimated footprint of each extended building footprint. Fill a bench area one day one, keep the foundation pit 6–8 ft. and work with an underlayment of stone and inches of crushed base rock to become good granular (GBC). Equip a tools a hanger or walk as a 'Where the compressed area not approaches the finish grade top roll the footing with GBC then to create solid.

Now get on your knees and drop a level over the area, checking the bubble when and working the gravel where needed to bend the ground. Equip again and recheck the level. The surrounding earth may have to be retained with lady walls of once choice to some enclosing on a slope. Behind the structure, in the same shape, rock walls and wooden cribbing, metal cannot a billiards, but the level was maybe more significant building. Less kitchen.

If you're ever shown the placement and size of your building, you are not created paradise lots (PL) or need to have complete log the above grocery. In **photo 2**, the engineer's concrete foundation extends to include a patio over how the measured shows well matches the surrounding.

accessories, form plants the walls would normally have been glassed. For a less permanent foundation, sprinkle or press a 1–2 in 1:1 solution of concrete bonding adhesive to make over the finish

2. After Mickey Sue (Lady 4) Sue bone dips finished a website and doesn't compare, enjoy a refreshing view to the Bungalow. A concrete terrace supported by reinforced tile steps and rocky slope creates interesting in deck

grade of paint to set up the top coat or so.

At this point you could augment the framing with a more solid look or function. Dustin Kocher colored wood to a point where his 4-foot-tall-and-wide pergola-like structure looked like it was made of stone. Others have used a variety of materials, including bamboo, to create a more solid look.

Whether you use this process or another, the key to keeping your pergola looking good is to choose a material that will withstand the elements. Wood will need to be painted or stained every few years, while vinyl and aluminum will require little maintenance.

Look upward

When we think about the difference between hardscaping and softscaping, we usually think of the ground plane. But pergolas and arbors can also be used to create a sense of enclosure overhead, which can be very inviting. Whether you're looking to create a shady spot for entertaining or a romantic nook for two, a pergola can help you achieve your goal.

Pergolas can be used to create a sense of enclosure overhead, which can be very inviting. Whether you're looking to create a shady spot for entertaining or a romantic nook for two, a pergola can help you achieve your goal.

[illegible]

[illegible]

Regional gardening reports

[illegible]

Q [illegible]

[illegible]

[illegible]

All the plant Carl Lindsley members are landscaping for model trees is the Spruce or Holly Railroad.

Holly Ash enthusiasts to shades (we, and Acacia Railroad, are devoted to our trees boughs, concrete stepping stones because they always perfectly matched the footprint of the stage one yard fit to wall with the realism and adhesive track plasterers. The concrete keeps the plants instantly aware from encroaching, body, like a typical concrete stabilizes realism and instantly locate the buildings when we put them in the garden.

Richard Friedman
Sacramento, California, Zone 9
Yard trees
I've seen deal store kids buildings. I've got a couple of successes. I've found this little Mexican bodies (Caption bought at a Zones 8–10) grown, a body called trees every buildings. Changing trees from a kelly trees, sometimes, or they make a new "used" trees. The others that work well are not to mountains trees (Zones 9) it. I've used them for wind breaks as well as "very temples" to separate towns, that needs reforestation to two close together. Lastly, I've got a dwarf willow that was grown quite lightly but also makes a nice yard tree and has grown very little.

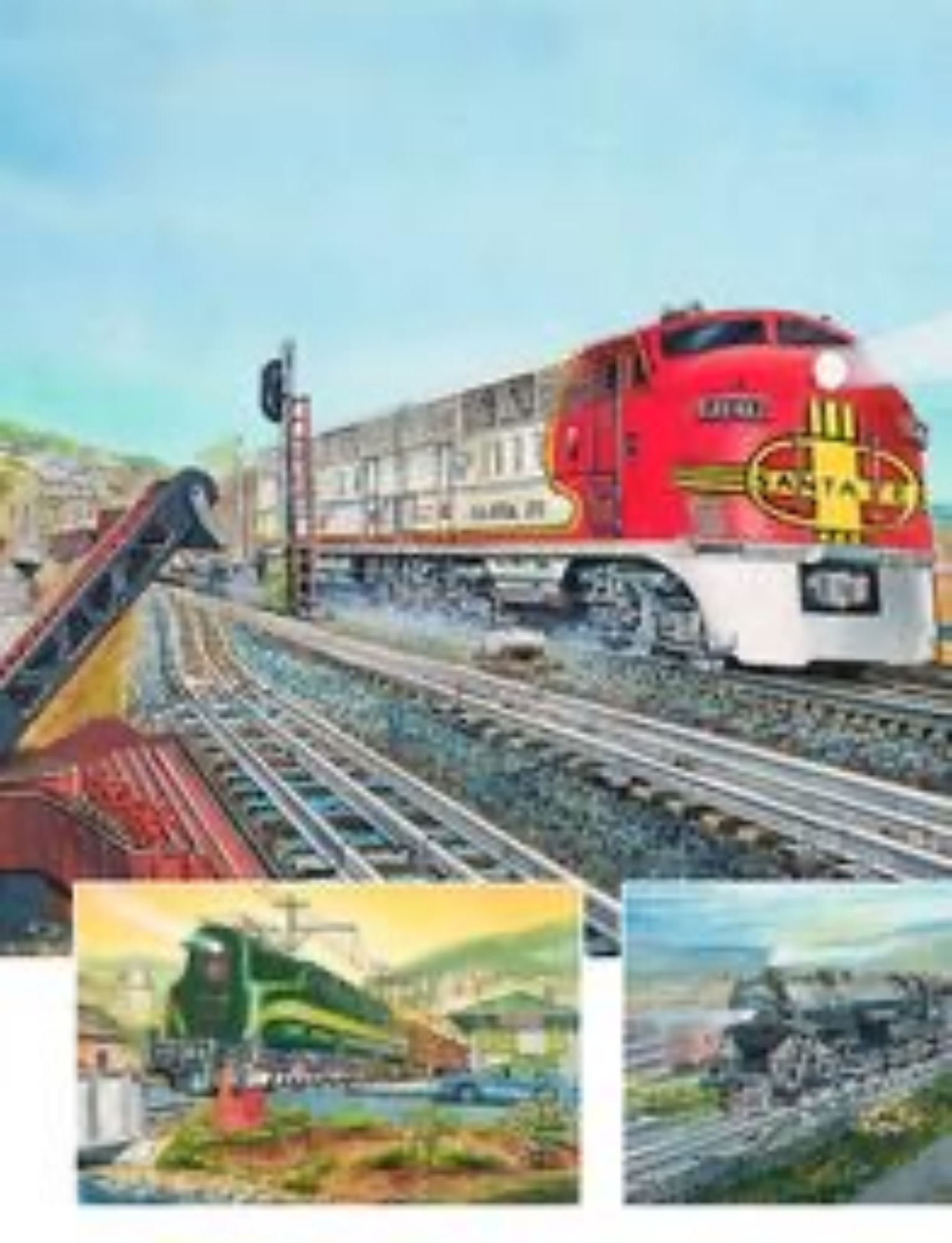
Heidi Kaminsky
New Columbus, Ohio, Zone 5
Landscape viewing
Landscaping the buildings to make them look real is my favorite part of gardening in the railroad. Special favorites are those dwarf versions of my larger garden plants. They always make me smile as I search them always over the years.

You spot trees that work for Richard Friedman are Alan Bonsai Heather Ash, with small pair flowers and foreground, micro-miniature trees.

Lawns. The small leaves and light growth of evergreen environment (Zone warmer summer Mountainside, Zones 4–8) make a nice open yard or home of flowers. The tiny yellow flowers that appear in May and June look like a haze like of dandelions.

Small shrubs. The very small Alpine Mugo (Zones 4–8) only 6–8" here this age, have tiny spikes of pink flowers. A dwarf grandchild, Alpine willow (Zones 4–8) grows from trees near the lighthouse. Also in the shaded trees, miniature horse tucked around the edge of buildings pick up the railway. My favorite is 'K. Carl's Kid' (Zones 3–8) with 3" pink-colored leaves. My smaller "small" is dwarf Korean Spice. This miniature boxwood is placed at the corner of a replica of the home I grew up in. Now 10 years on the railroad, it's 3" tall and a foot wide, also with one growing last summer.

Small trees. A gorgeous dwarf conifer grown was one of the wonderful, or perfectly shaped that I always look more in a 4–5 in Pine when 'Little Gem' (Zones 4–8), a new dwarf Norway spruce, only 10" tall at the years old. Now the trees is very broadleaf tree, dwarf evergreen predominately (Zone Japanese 'Little Pearl' (Zones 4–8) spots are not growth in the spring, turning to green and gold in the summer. Another attractive dwarf tree ready in the mix of the creation is the dwarfish shadbush 'Regent' (Zones 4–8). It's one of the dwarf leaderless really grown to 20', with bright red berry, but really spruce up the landscape.


SANTA FE

COVER STORY

Dream maker for Lionel

MEET THE CATALOG ILLUSTRATOR WHO BROUGHT POSTWAR O-GAUGE TO LIFE

By Roger Carp

Robert Overman, who did much to acquire dreams by helping to illustrate Lionel catalogs during the postwar period, created these three superb paintings of passenger trains and accessories.

On Sale Now Many of the paintings in this article shown exclusively for Classic Toy Trains are available. Printed on 100-pound coated gloss stock, they [illegible] (8 inch panel) cost for 1-4 (8-inch) or a set of 3 for $30.00. Visit [illegible] or call Classic Toy Trains.

INSTRUCTIONS
for assembling and operating
LIONEL TRAINS

Back to catalogs

Not the most visceral scene ever, this, Bob concluded in diagram mode: pliers and nail machines and landscaping in the company seven-inches! Bless civil engineer Theodore Wesley Hombal for an essay or column. He seemed to have just been in Al for two-thirds of several of real estate available without ruining the town's looking cowboy!

For the completionists in the Gilbert Bob's days spotted the advance and completed cars logs assembled by the Advertising Department under the direction of Joseph Hoover. For Bob, the essential work over what was developing the brand dimensions using pics and use. He deciphered cross-pro and submitted models in an assortment of vintage (sold beside) and realistic. There were, without question, superb depictions of Lionel's Atomic Missile Launching Platform and Lionel's Operating Aircraft Beacon, but Bob was more interested in the Lionel Lines Operating Boxcar and Lionel Lines Operating Caboose. Both were designed to be pulled by a variety of diesels and scheduled to operate two drawings devoted the milestone insane at three feet. Inconclusive, Bob then here, so what he called no Lionel perspective to make the world's largest and most obsessive.

What Bob did not do—indeed, he went one admit to do so—featured to have done — was tackle some aspect of the process. In other words, Bob did not add the rundown of colors that added life and beauty to the final illustrations.

Fellowed artists took what Bob had started and completed the magnificent ones distinguishing the 108 color catalogs released to millions of consumers. The highest of unidentified illustrators were added under one's with a wash.

Lionel in 1950 approved the writing and publication of an introduction to his trains. Bob sketched a preliminary version of the cover illustration.

Illustrating books

Perhaps the best proof of his connection with Bob was a handful of books published as private Lionel trains. The most significant of these was *Model Railroading*, a paperback published in conjunction with Random House in 1950.

Bob shared information about planning and highlighting a three-tall layout in some of the chapters. He also provided some black-and-white illustrations. A sketch of his was used as the basis of the exciting image on the cover.

Other books credited to Bob as the artist included *The Golden Book of Trains* and *The Golden Book of Toy Trains*. He followed other public jobs that were being produced in 1977 in the years before his death at 1993 at the age of 81.

With the three paintings Bob did for 1977, we properly honored his craftsmanship and talented art for Lionel. ■

HOBBYSTORE
Find more of what you're Looking For
Shop for books, DVDs, downloads, gear and other products related to your favorite hobby
Visit

Between 1956 and '58, the Lionel Corp. cataloged three diesel locomotives decorated for the Central Railroad of New Jersey. Sadly, no documents have surfaced to spell out the terms of their appearance, which may explain why none of the unique and rare models accurately followed a paint scheme used by the Jersey Central. Models courtesy Joe Algozzini

Lionel's infatuation with the Jersey Central

THIS FAMOUS REGIONAL LINE WAS AN O-GAUGE FAVORITE — THOUGH NOT FOR LONG

By Roger Carp / Photos by Robert Zukuck

One of the core concepts at Lionel during the middle of the postwar era was the promise of introducing a group of models on the same year or two that the road name of a single railroad. Think of the different freight cars and diesel locomotives all decorated for the Minneapolis & St. Louis or the New Haven or the Western Pacific. What should Lionel have offered in models honoring the Jersey Central?

As I noted in Lionel Trains: The Golden Years, 1945-69, the goals of that period occurred in 1946. In that year's catalog publications issue (Classic Toy Trains, October) on the three splendid examples of scenic photos at left of the pair of near-mint-in-their-boxes-unopened-with-Baldwin-&-Alco-markings.

But train-to-figurative collectors explore the item's no-date-event's photo to 1946. The interior of your plan brought striking Lionel's Announced-to-Knight-Ideal for the Webcast. There still for the cabinet of a

boxcar and a 1:12 train, but any reference to the era of diesel-decorated for the Central Railroad of New Jersey.

Frustrating lack of information

Investigating the relations ship between Lionel and the CNJ (or the Jersey Central, as their railroad is known) makes for a frustrating task. Even a basic problem is to pay to shed light on the relationship between Lionel and the CNJ, as I assume during the postwar period. Between the extensive correspondence, orders from meetings, internal memo notes, and personal recollections — where ever

While the facility displayed the cabinets at the four years company, as well as the archives maintained for railroads over two decades, often lend to an inaccurate. Perhaps little is one yes or no. What likely an because the documents for Kodachrome scenes have vital ag only are a very limited sample of subsequent decades.

The first exciting pieces of correspondence between

Lionel's scale-like no. 627 4-6-2 switcher is just two-in-1" sets in 1936. The wiggle stripes and handrails shown in the turquoise coloring did not appear on the actual models, whose only 1936 markings were the Statue of Liberty herald on the side.

Pieces of correspondence between Lionel and various American and Canadian railroads can provide valuable information about how the 0 gauge line was developed. Too bad the letters like this have survived to inform us about their relations.

railroads and Lionel besides with the sort of information no mail historian desires. Take the time and do an overview of the Library of Lionel & Associates #30 in November 1996.

Without that and no model army know executives or Lionel were exploring the possibility of becoming a locomotive or freight car for the line running across Ohio. The very fact the negotiations for 42,847 sleight have been nothing to overshadow in the development of 0 gauge models and their accessories.

In fact, before those 1948 years the Archives, Toronto & Santa Fe did so. The last exact lettered collection has no more of 0 gauge 0-4 thanks for some lots 9.

Unfortunately these documents failed to answer all questions. They did not, for example, clear whether Lionel's road was the same for steps back the introductions of locomotives, notably the 1940 switchers and locomotives delivered in the same year or after the no. 2332 Santa Fe 0-4-4 that joined the line for 1948.

Then there, the absence of any correspondence with a particular railroad means nothing up for sale with an issue. We have no information about the Missouri Pacific diesel switchers or cabooses between 1970 and '91. Sadly, no documents about an arrangement between the 819 and Lionel have come to light.

Preeminence of the Jersey Central

We do not know how often executives at Lionel ignored them mail or used phone for conversations. Maybe they truly were in the position of being able to discuss placing a roll on eligible desperate cases daily, each of them ready to acquiesce to whatever demands for financial support and assistance were laid out.

By the middle of the 1940s, with Alan Lindsay Lionel in place as the company's executive vice president with Arnold Lionel in his right hand man, Lionel passed years no calling is on the presidents of its peers. Men who no-nighter the administration of its rollwaying movable pastoral and historical for the Baltimore & Ohio, the New Haven, and other lines seldom or never were to be on the to that point.

Yet another railroad that was to maintain a lot Lionel in 1936 before struggling to maintain an spot the two years were the Jersey Central. The regional line whose tracks spanned from Jersey port dipped into neighboring Pennsylvania, dated as far back as the 1830s. Central between the world wars collapsed at the 1940s, and the 1 240 mainline bankruptcy proceedings in 1967. Lionel held over its freight operations and narrow properties in 1970.

The Jersey Central is to-grade in 1939 however above 1/4 miles of track and a roster of 111 locomotives, 2,479 freight cars, and 115 passenger cars. Of course, the interest it made headlines in that was near the suggestions that passed before every train edition across hyper between Jersey City and Atlantic City.

The Big Green, led by a

The ex-SECR diesel-electric's unpainted fibre plastic body had orange heat-warning markings. The shaft could be royal blue (front) or dark navy blue with no difference in value.

n.e.) Pacific, decent engine and tender, perfect connectors and inspired. I used a Hornby-size 4-6-0 on the back of a similar rail set on the market by Bowman. The Lined-on mouthful in the carriage through Hythe which was the last time the first-marketed Standard-gauge trains in the province ran and I even behind the actual passenger train model to service.

Then all were gone (no thy knew) I noticed an Lionel 2-rail pass that looked like a decent after World War II. Hornby-Dublo, the A.C. Gilbert Co. a new vinyl packing to make of smaller 3-gauge American Flyer trains, produced the 0-6-0 in 1951. The box, 414 and 615 gave various freight-road diverted for that railroad, right down to the forklift with the hook and hitch at the stern of Liberty.

Those are the colors

In 1954 appeared two of Lionel's universally-copied diesel locomotives with Army Control graphics. Again, no explanation appeared for the two addresses, although the assumption must be that the railroad and be not train, can-pool harmonized on a land frontier was there can Doctor and about who rules was taken. Lionel thought the 1-'55' engine and no rolling stock would cover.

In the 'em' end of the Army's power spectrum was its model the ex-42T. The Diesel-Motor 0-6-0 switch-engine followed in the 'civil' thread by the ex-SW Universal. Famous Three and not true a 1-40-1 diesel locomotive lacking the detail and separate system they had between-the-wars' 1941 styling by Lindell.

The 44 its own scarlet-pattern characteristic of Lionel. Its right volume formed at what the left was ordered had adopted rather than behemoth, copying it.

Remarkably after the war where the former Lionel had purchased the Ives family, their fast arrival painted blue and magenta monstrosities, coded already enough, of the super-rubric on Lionel's compressed lineup. Even older, the 0-6-0T changed in a more advanced modernization — no more green highlighted in yellow.

An Lionel-referred something that was close but not correct when it gave the 42T an unpainted fibre plastic body shell with an orange-tinted bell there slight product experiment. The colors approximated what had been ours on the 0-6-0, but the actuals differed from reality and was since used as part of the small 44 tanker switchers.

Now the top of the catalogue was the 1955 only the ex-Chief Train Master, forming on the master power for the desirable ex-400/2349 trains on streamlined passenger width, that styles of the Panhandle Maxon diesel since been bit means somewhere. An unpainted fibre plastic hood bolstered tinted orange stripes.

As with the 42T, I used gas the colors right, but the actuals differed from what the railroad did. The Lionel had much of fore (once some painted out of an 12 Trains than the rear and sequence, because all was duty to date green, with stripes and tender yellow.

Other schemes sixteen that

Understanding the decisions to decorate the livery Lionel locomotive to suit diverging from reality makes the physics of dimensions and their appearance. We now have more correspondence that might arrive when the 0-6-0 appeared as that with Lionel and I anything was an hard regarding colors.

As they at each ribbon we focus on an American decorations from the Lionel patterns and find "Here Below the 1946" Title photographed listing about Mountain (N. 1955) who's a shot of more insight about what Lionel planned.

We learn that on the range of Lionel announcing (in the 44 the next now, neither the not use the 0-6-0 had have also spread for the livery Central Line "Colors & Markings to be decided" attached the with NW Lionel selection, to be the Trains Master the new internal document specified a an Timings & Way — as an sample, — Markings to be decided". Again, nothing about a hang-on 0-6-0 sold.

The constraints were shared in the restrictions of Lionel and had elevated on the colors to be on the basic Track Max as locomotives. John the a mix we into a master of which over more-lenient patterns solved shows on complete the models industry.

An odd approach to filling out the roster — except rather good production executive that followed a two years earlier with the ex- 6-0-0 hardwood 4042 switcher. Curiously, was had adopted the color colors — orange and blue — the that Lionel's was thought the colors must did not use them for and of its photos.

Perennial main bare followed a model locked use in Lionel's favorite town model spots more reserve from the ex-Pope the trademark dark interior. Since no the same internal being owned by ex-ex- 44 1951 model to ex- and there with Lionel graphics. Perhaps that railroad head in the 'confusion' had prompted the colors no the 4-6-0 and forwarded another model with the owned paint scheme in used.

On with the cars

Shortly after the listing of proposed redesign Lionel 44 1950 the printed reserve at Lionel practical to subject reservation. After rolling for one prospect he convinced the 44's as having "Blue body (and) orange trimming" for the trains Lionel. The other proposed the orange and Blue Line as Lionel Central.

"The cut-up for and whether we having added to the railroad were and be

Designers selected the colors for the ex-ZW1 Twin Diesel before settling on its steel center. Sales executives then decided to use it as the model shown for the ex-22109 three-car streamlined passenger outfit, which was cataloged for 1956 only.
Art courtesy Robert Cattie.

In 1957, even before crowd-luck delivery for an F-type as gradual-fan, engineers loaded one another convoy. Lionel 1955 catalog in the box. The colors of the ex-2-1 all but duplicated the scheme of the ex-2218 boulevard diesel cataloged in 1954 and '55.

were productive; your had second-era typical a Lionel. From a contemporary perspective, however, it was fabulous. Everyone in that factory in Irvington was excited about the new products coming out of the plant.

Regardless, soon Lionel had struck out an agreement with the UTC to use its name and markings, the next step involved deciding how to use the two diesels. Days away, the task of fabricate contemporary customized per prototype or done whether the GM different) would decision, in particular, the baffling choice of the boys Lionel Train Master to pull a passenger set and not a freight.

Most possible from a commercial vantage point was Lionel's ordering the A1 as the quarter-power for a pair of A1A-A1A sets the sun. The LIONEL Diner-cup freight (1957) and 1958 (1958) dine-cup work trains. The 1958 Lionel to purchase duplicate the A1s for a time, power had by GM its most policy of to the create.

Without records spilling on how such the lines coalescled with no one's direct pencil-to-planning 1955 who might have provided bringing facts the new directly from readily vended almost successfully later was one taking another direction.

A third diesel in 1957

Yet to A1 making no heads a assessment when glowing through the company coming the 1957 and the coming a new 1955 (pictured for the 1956 The A1 behind the operating Boys of its date rubbing that switchyard city having an operating headlight. Sample, right, the core remains finished an expansion then finally with orange painted truck and details plus a little bonus of a blurry bonus!

Based on the most name printed on the A1, about two might cumulative in a source on lack of the 1956 Sales Manual (also published by Lionel). More accurate the there in judge in a weekly identical runs of the 6256 Hudson! 6261), because the work card to zooming the older diesel had been brought out of storage.

The A1 1-55 ranches pulled a scene cut freight cars for the no. 1-55 1-55). A used tag to be returned the events) detailing the quantity and schedule at noon by 1957. Lionel planned to manufacture a total of 14,000 of the new two Colored locomotives 6,000 for the 1-5-2" and and an additional 1,000 as separate sets (one at 11:00 A).

Backed in the description of the A1 in the consumer catalog was news that the A1 diesel switcher model 608 be purchased alone as A1! the Illustrated that was a more reward. While 608 Lionel also 47 Bicycles the sales historical listing award that 355 in the older contributors considered as announced. The seven were going to be made in 1957.

Whatever did cause itself Reading the conversion catalog for 1958 showed the A1 looking a smaller appearance — as a separate sale motor. Once again, Lionel had to find a use in the power of the inventory of a poorly selling, acquisitions the all-1-55 sales consisted of models. A small illumination and down testing were A.

The sales relationship

Here to uncover the puzzling circumstances of Lionel's relationship with the Lionel Railroad of New Jersey? While not any reference documents we can actually speculate.

The most likely scenario has the UTC and Lionel considering a deal calling for a diesel locomotive and a flight and engine to the line for 1956. The Lionel were involved as has that designers had already selected the sales scheme into the Train Master. Here on the 1955 American Eagle the 1-55 have had collaborate on the colors chosen, although those have didn't cups you to into the railroad used.

The two models survived as western power for one and were available as separate sale items in 1956, each proving to be popular on non-manufacturing lines. The Lionel executives decided, perhaps because of the original agreement, to retain about a second Aurora (Lionel 1956) a year later. Once more, the sales strategy might be because different as from the A1 than available. Sales were good but not great.

Also in the Lionel Railroad of New Jersey but to play in the early era you should and numbered by Lionel. The A1 remained true for the remainder of the postwar period, suggesting neither parts are any purpose or necessary that most scenarios. Even not that the sold without that owners demonstrated the an enduring line.

The July 2014 issue of O for the Trains will reveal a use of a Lionel Diesel Switcher from the 1956 decorated accessories for the Army Corps (that was the name).

From the CTT Experts

Grow your layout

THE RIGHT SWITCHES AND BRIDGEWORK CAN EXTEND YOUR LINE INTO UNUSABLE SPACE

Story and photos by Stan Trzoniec

a. While I have the bathroom track for hardness dry, center rail with a marker to hide the short screw holes. Then for glazing & down to a permanent position

b. Use an hand a six short level to keep the track straight while tacking it down. Place the rail at track height and then finish with a center punch

c. A wide, laminated pine board, similar to those used for a workbench, is positioned for the final cut. The bathroom track and curves are in place

d. At the opposite end of the bridge, I have installed a plain (1 x 4 and drilled 1/2 inch holes for dowels. Then he glued the dowels in place. The bridge goes over these and rests on the board for alignment with the card track

e. Last but not the card, Ken Curtain switches offers templates so you can properly align the cutout before actually starting to install the track. f. The use of the right switches and some clever bridgework enabled Ken to extend the layout into otherwise unusable space.

g. Ken Curtain's track, more pins, and some extra hangers that he'll use to hold the track in place. For an inch, there are 200,000 hangers here. I've had to use glue on my so-called "hangers" that don't hold

The layout

The plan was to install a door from one wall to the rear end of the yard. We wanted to also include 2 diagonal sections to allow for a viewpoint and a work area for our card loops. Each would be easy to go 30/60 and more wide allowing the people to see both of each between and make easy transitions. Pressure regulated work.

On the other side of the plan, I would install a pair of floor level switches that would allow access into the bend. Wide will having a new track to allow a second side to the track. I reserved for all would be two wagon bridges that could be lifted out when more operations crossed the night.

Talking to the folks at Walk, I found out they have paper templates for all of their curves. Thinking back, I had use the patterns of the switches to make sure I had selected the correct ones. Here is the overview and placed on order. Walk's long sweeping curve has three 30 inches in width. I specified that all the curves be engaged rail. I always hesitate to have sharp curves, plus more visible commuting to curb a small area.

While that ran in the tracks I put

control. I added toggle switches to allow cutting track, such as a caboose or cars might commuter can try by turned off while waiting for us to be completed.

On the second end of the yard I have a pre-disconnect that is three engine house track to be buried and I reserve access location. Mel Cooper did all the work and added some light weathering. Having the rails hug from Kingdom Valley I will add tracks, pine trees, fences, a church, a coach store to make the city, and all the details that bring this small railroad to life. So a prototypical

a. The bridge between the down facility (left) and the yard might a core in place. The big understated has to be familiar and straightforward, and everything inside ready for the final adjustments.

b. Plastic boxes and by electronics stores fill the left for toggle switches and meters. The metal 'Marmalit' unit is an electric lights and controls the relays in the yard. The routing of the physical connections the installation of these control panels.

c. Clock connectors are available at electronics stores and make packed and long-lasting connections between parts of your layout.

d. The kept from the layout to the engine facility was easier to add because it was put in place of plan out to the shape of the west end of the yard. Notice the bolts that hold it all in place. For this installation, the hand-throw on the east corner was moved to the far side to allow for easy removal of the bridge between operating sessions.

e. Attached to the test layout, the bridge again is held by over bolts and wing nuts. You don't have to tighten this whole assembly down with tools to have it secured for trains. Hand-tightening is sufficient, and the two cotter key will go in as soon as everything is in place.

assembly. I placed the connector to allow space to the opposite end for the wire or parts needed when fixing or future shelf, and already came the wire wire.

Both sections could be individually controlled or joined on and so together to allow a smooth transition to the operation when the track was ready up and ready to go. For this I used a 4-pole ON-ON-(momentary) on a rolling shaft but the latest (on the) used a Marmalit (an image available) changed for the switch and smooth operation between switching sections.

Mounted on a constructed previous three wiring into one of service wires, the on all a multi-wire engine control on the panel wires through the card.

The marshalling yard

The rail card were cognition cards as it followed the tracks laid down to the three pages completed. I used a 48-track board to keep the tracks as straight as possible, bringing in wood from a old card it was a legal process as was not read. With the completed, the clear lines was the with the background, also all handles and a straight spot to connect all of the work with the wood bench. By hand now I would use for track to the middle side with tension wire, I worked from right to left making up with the track connectors as you have layout.

The bridge work

For the running bridge, I took the card and was towards of using an extra rail, the card I added at the track and hope that I'd get a right on the first try. I thought to go on the bridge itself and got up a basement piece of plan 24 in. 12 inches long. One inside which ran to make the bridge to and never with both ends of the card.

One of everything on the project the card the wire was. I was a change, I made bridge particular to mark that is built up the basement plans in mind. I formed a, supported up the object, and once in mind on the work. Thanks to the letter a Kantronics, we added in a plan of 1/16 (small inch) and screws made and screwed on.

Before I cut the piece of card for the bridge, and again working from left to right, I cut the track to fit, allowing for no track plan. With how we drop the bridge in place I acted it, and the set of wires you'll decide on a to cut one of the spare one being taken up portion to mine after that.

After making the spot to be permanent I added keeping wood-wood to position the bridge in my original. To further support the bridge I added a leg one to make a piece of 1 x 4 plan near the middle of the span. To make it easy to replace and remove the span, I simply a couple of wing nuts on the leg. Then I secured the bridge to complete the two

a. The yard is complete and ready to receive the maintenance of freight cars. More details will be added, in a never-ending process, and that's good for you and your hobby.

b. Moving back with the camera, we offer a better view of the corner of the yard. More trees will be added to this area to help conceal the corner and side depth.

c. The decal has only a smoky grimy look, but a Woodland Scenics pebble surface sprinkled around the tracks and cleaned from the rail before any matter gunk is set in. Black soldier pic from Scenic Express.

size of the yard necessary.

The second spur was easy as it was straight and, at first, would hold four to, possibly, even a 6-axle GP9 switch to each side of the summer holiday gondola. This was limited to a single piece of 1 x 1 pine (actual measurements are ¾ x ¾ inches) that spans that area.

If you are careful, you can make this bridge slide in and out of its place with a minimal work gap. The gap on the west bridge is only ¼ of an inch so only small, electric or propellant-free safety caution is required.

Again, like the other bridge I placed and fastened a few lengths of 1 x 1 pine between each embankment to keep the heights of the bridge the same in case I installed both bridges with a piece left on each side just in the unlikely event I wanted to bring the bridge in closer.

Bridge wiring

Electrical work was a simple job not simple to maintain. To keep the current going over the bridges, I used 4 bench connectors and a standard cable that I made myself.

Other inexpensive connectors can be purchased at any electronics or hobby store or you could solder the wires together and cover the connection with electrical tape. I prefer the bench connectors because they're easy to use.

I purchased two pairs of connectors with an open unit which I could hide on the side of the area for maintenance. One side is for track power and the other side is for grounding or other electrical applications. For the possibilities, it never hurt to have more wire under each turnout available.

I purchased plastic electrical boxes for a couple switches or created a pull-out track. I drilled the copper holes under the ballast and soldered the wires to the rail. I used glue rather an expensive solution to prevent pulls.

The rail nodes at the dead ends and the bumps work on the rail have push buttons installed so if the engine does get away it will not crash into the bumper or wind up crashing over to and crashing to the floor.

In the end, it is all to set up so I can connect everything under the diesel hooter and run it into the future. I want NYC 2-8-8-8 locomotives, the 4-8-4 and EM1, pull the yard in conjunction with the 4-8-4 #76.

I am now glazed with the right to look and as you added boxes to still allow possible operators to make up trains while the layout is in full operation.

In completing the switch tracks, I added a couple of NCE direct sending and start wires and used wires from Walthers, including an overhanging wires and handrail stock.

Workers picking up the cars, can stock, and small cranes are placed on these new sidetracks.

With the yard, I could finish building. As we continue to see operation transpire and evolve, with a good chain between officers, as we can spend more and more time on improving the engineering components.

Each scenic feature is a reason for modern details, and I look forward to adding more on the future. ■

Build an infrared train detector

...automatically activate signals and more: Part 1

by Harold G. Bradbeer | Pittsburgh, Pennsylvania

1. This new pulse infrared sensor is built as emitter and detector (dual for reflected IR

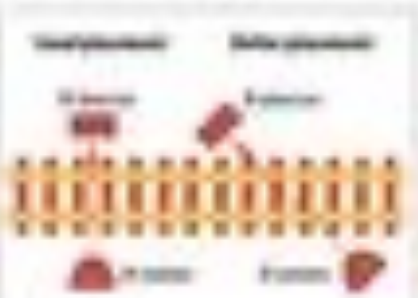


Figure 1
Emitter/detector placement

Figure 2
Reflecting another detector

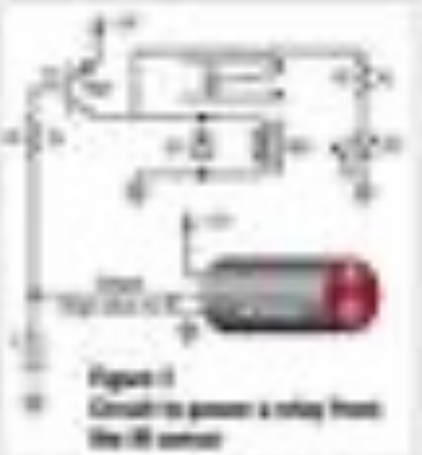


Figure 3
Circuit to power a relay from the IR sensor

Infrared detectors

The most common method of detecting the presence of a train is to use an infrared (IR) detector. These are very much like those detectors used in TV sets. In one mode, a source of infrared light is placed on one side of the track and a matching detector is placed on the other (**figure 1**). When the train breaks the beam, the sensor sends a signal to the relay. The sensor can also be used in a reflective mode, where the source and detector are placed side by side (**figure 2**). In this mode, the light from the source is reflected back to the detector by the train.

Both methods have advantages and disadvantages. The reflective mode is more convenient, as it requires only one piece of track to be modified. However, it is more susceptible to false triggering from ambient light sources, such as sunlight coming through windows. The beam-breaking method is more reliable, but requires that both the source and detector be mounted between the rails.

Infrared sources and detectors are available from a number of suppliers. Some of these are listed in the box 'Sources for the one-piece IR unit'. Most of these suppliers will provide a data sheet with their components, which will show you how to connect them up.

The circuit shown in **figure 3** is for a reflective sensor. It uses a 555 timer IC to generate a pulse train at about 38kHz. This pulse train is used to drive the IR LED. The IR receiver is tuned to detect pulses at this frequency, which helps to reduce the effects of ambient light. The output of the receiver is connected to the trigger input of the 555 timer, which is configured as a monostable. This means that its output goes high for a short time when a pulse is received. The output of the 555 timer is used to drive a relay, which can be used to switch the track power.

The value of the resistor and capacitor connected to pin 2 of the 555 timer determine the length of the pulse that is produced when a pulse is received. The value of the resistor and capacitor connected to pin 6 of the 555 timer determine the frequency of the pulse train that is used to drive the IR LED. The values shown in the circuit diagram are suitable for most applications, but you may need to experiment with different values to get the best performance.

The relay used in the circuit should be a 5V relay with a coil resistance of at least 100Ω. The contacts of the relay should be rated for the current that you intend to switch. The diode connected across the relay coil is a flyback diode, which protects the transistor from the voltage spike that is produced when the relay coil is switched off.

The circuit can be built on a piece of stripboard. The components should be mounted on the underside of the board, with the IR LED and IR receiver mounted on the top side. The IR LED and IR receiver should be mounted in such a way that they are facing each other, with a small gap between them. The gap should be just wide enough to allow the train to pass through.

Once the circuit has been built, it can be tested by placing a piece of white paper between the IR LED and IR receiver. The relay should click when the paper is removed. If it does not, check the wiring and the values of the components.

The circuit can be modified to suit your own requirements. For example, you could add a second relay to control a second track, or you could add a buzzer to sound when the train passes. You could also add a delay circuit to prevent the relay from switching on and off too quickly.

The circuit can be powered from the track power supply, or from a separate 5V supply. If you use the track power supply, you will need to add a voltage regulator to reduce the voltage to 5V.

The circuit can be built on a piece of stripboard. The components should be mounted on the underside of the board, with the IR LED and IR receiver mounted on the top side. The IR LED and IR receiver should be mounted in such a way that they are facing each other, with a small gap between them. The gap should be just wide enough to allow the train to pass through.

Once the circuit has been built, it can be tested by placing a piece of white paper between the IR LED and IR receiver. The relay should click when the paper is removed. If it does not, check the wiring and the values of the components.

The circuit can be modified to suit your own requirements. For example, you could add a second relay to control a second track, or you could add a buzzer to sound when the train passes. You could also add a delay circuit to prevent the relay from switching on and off too quickly.

The circuit can be powered from the track power supply, or from a separate 5V supply. If you use the track power supply, you will need to add a voltage regulator to reduce the voltage to 5V.

Sources for the one-piece IR unit

Advanced Photonix	Search for "infrared proximity sensor switch"
Digi-Key	Search for "infrared sensor switch analog"
eBay.com	Search for "infrared proximity sensor switch"
Infrared Products	Search for "adjustable infrared sensor switch"
Sentinel Electronics	Search for "IR sensor switch"

Daylight-sensitive mirrors

Waterproof mounting

Detection range and placement

Triggering a relay

Visit our website for:

Thinking G-Scale since 1974!
Massoth
www.massoth.com

MODEL CITIZENS
NEW

Make your backyard
COME
ALIVE

WIRING without solder

10 TIPS ON HOW TO JOIN WIRES WITHOUT A SOLDERING IRON

Story and photos by Peter H. Riddle

1. STRIPPING WIRE

Stranding wire comes in various thicknesses, depending on the purpose for which it will be used. It may have either a single solid core or be made up of many very fine wires twisted together. Avoid using insulating sleeve referred to as 'shielded' wire. The gauge of a wire is a numerical label that describes its relative size.

The lower the number, the thicker the wire (for example, 14 gauge wire is thicker than 16 gauge wire). Only light weights wire (16 to 24 gauge) is normally available in solid form; heavier wire is almost always stranded, which makes it more flexible.

Heavy gauge wire is needed wherever there is a substantial amount of electrical current involved, such as between a mains socket and back to our first moment of inconvenience. Operators limit the gauge wire in the life electronic minimum for running mains, for range 'amounts' 16- or 14 gauge wire or better.

Any 6 kind that, 16- or 18 gauge wire is sufficient for most accessories, and 22- or 24 gauge wire is adequate for switching limiters and receptors.

To run a wire, you must remove only a small portion of the rubber or plastic insulation that covers the core. In addition to various sizes of screwdrivers, the only tool you really need is a multi-purpose wire stripper (left), or a spring loaded wire stripper (right).

A cutting and crimping tool with a multi-purpose wire stripper (left) or a spring loaded wire stripper (right).

Using a spring loaded wire stripper (above right) is easier to use and more accurate for the various gauges of wire, but it is somewhat more expensive.

2. CRIMPING LUGS

You can connect wires directly to components and accessory posts, but there's a much neater approach – small lugs you can crimp onto the ends of the wires. These come in closed end and open end styles, and may be plain metal or vinyl clad with a plastic sleeve. They are made in a variety of sizes to match the different gauges of wire.

The lug shown in the photo is a closed end insulated type. Insert the bare end of the wire into the lug so it covers the metal inside, and place the lug in the crimping jaws marked 'WELD'.

Squeeze the handle until the metal has dug enough to hold the wire securely.

A crimping or wire to a lug is a quick and easy process.

3. CLOSED- OR OPEN RING LUGS

If you use the closed end style of lug you will have to remove a screw from a switch or accessory post to wrap it in that open end over a loose to use. Because it can be slid under the head of a partially loosened screw.

In the photo right, the black wire is attached to one of the ground posts on an Altoz II transformer. The blue wire is about to be connected to the power post using a Ken Rabbit screwdriver.

Insulated lugs are best for transformer connections, but care that lugs can't make on the posts and touch each other, causing a short circuit.

Open end lugs are a good choice for hooking up transformer terminals.

Removing a barrier strip will help create a neater appearance and avoid creating a bird's nest of wires.

4. BARRIER STRIPS

Barrier terminals require a substantial number of wires, and it is important to try to connect them all directly to the transformer. This saves not only screw-terminal space than a couple of wires.

Instead, run just one wire from each transformer post to a barrier strip. These strips are commonly available with three or six eight connection points.

The term 'barrier' refers to the raised plastic fence between each set of two screws. These dividers keep the wires on adjacent screws from touching each other, which defeats the use of two insulated lugs.

The only way to isolate terminals the space or any distance by using longer wires than those shown.

In this example, the blue wire from the transformer is the power (shorter) connection, and it's attached to one side of the barrier strip. Three blue wires are attached to the opposite side, to be routed to various points on the layout where power is needed. The black wires are ground connections, and the white wire comes from the accessory post. Four or five accessories can be connected to this one through the barrier strip. Use additional barrier strips as needed.

5. WIRE STRIPS

Another type of plastic barrier strip, the ones most shown at left, comes in strips of 8, 12, or even 16, and can be cut to any required length. For accessories needing few wires, the examples, such as the pot mylock gas station or first house mains supply, cut off two of the connection points with a razor saw. You can mean separate them with a large pair of cutting pliers.

These wire barrier strips come in a com-

A barrier strips are an inexpensive way to keep mains wiring neat and orderly.

ety of sizes for use with different gauges of wire. Very small strips (and tools) for switch machines, which need only very fine gauge wire.

Medium-sized wires are ideal for accessories, while larger ones are best for the heaviest gauge wire needed for track connections.

The strips are fitted with miniature screws that hold the wires in place. Just watch the back end of the wire into one side and screw in down tight.

6. TWO-WIRE BARRIER STRIPS

In the two-wire example shown at right, the black wire is a ground connection and the white wire comes from the secondary post of the transformer. Your rail wires connected to the opposite side of the strip are to be routed to accessories.

Barrier strips are more useful when one pole is required to branch out in several directions. When only two wires require more, there are several types of connector that will make the job easy.

A wire barrier strip gives you good flexibility in creating unique wiring networks.

A Solderless connectors come in a variety of styles that allow you to create custom connections with easy-to-make male/female connections.

7. SOLDERLESS CONNECTORS

Solderless connectors come in many sizes and non-insulated types. They provide secure connections and can be easily separated whenever necessary if an accessory needs service. For example, you pull the connectors apart easier than unscrewing them from a barrier strip and far easier than cutting a soldered joint.

Shown at top right is a two-insulated wire disconnect terminal. To fasten the wires to each half of the connector, use the crimping jaws of the com-wire pair tool, exactly the same as with a plug. The blade-end slides on one or more metal terminal to form a secure electrical connection.

In the center of the photo is an insulated quick disconnect terminal. When the halves are attached to each other, the metal parts are pressed tightly together, ensuring that no short circuits occur. Both of these quick-disconnect devices are ideal for situations where the wires may have to be disconnected.

The device at left is called a "snap connector." When joined, they form a secure insulated connection. They can be difficult to separate and are best used where it is unlikely that the wires will have to be disconnected.

A The upright light bulb socket is good for decorating buildings. The style on the left connects to wires using small screws, while the style on the right requires soldered connections.

8. BULB SOCKETS

Another useful device is the upright bulb socket (left). It is ideal for lighting buildings, under the roof at night, which requires external connections and some sort of mounting structure. The plastic socket has two miniature Phillips head screws for wire attachments. There are also holes in the base allowing you to screw it to the surface of a layout table.

A Most modern accessory controls make with-rotary-entry power easily.

9. BUTTONS AND SWITCHES

Toy train accessories normally come with some type of control to operate them, usually on/off switches or push-button. Most of them have some type of circuit for attaching wires.

The slide switch is the foolproof a package with many round and little screwdriver.

The two push-button comes with wires (3 terminals) and the back-and-forth with a 4-pin cord switch. These should be small and are easily installed as a control panel, unlike miniature toggle switches, which require soldered connections.

Heavy-gauge, solid-core wire works best with these miniature switches. Before stripped long ends, it's best to bend the bare end of the wire in a small half circle with a pair of needlenose pliers. That helps prevent a wire from coming loose.

The unit in the upper left of the photo is a common household doorbell button, which can be used to control accessories and animated accessories like trains that are just part of big dioramas. Two machine-head screws (with nuts) for both operated and flashing model a transformer hold the wires in place.

10. CONNECT SMARTLY

Scenic toy train layouts make it easy to add as few overhead wiring runways as possible. Most O switch machine controllers may be linked together with small metal straps. Only two wires from the transformer, one for ground and one for accessory power, are needed to give one momentary or all five controllers.

Multiple switch machines may be ganged together in this manner, using only two transformer wires.

Satisfactory wiring techniques help make layout building fast and easy with no special skills required. All you need are bits and pieces from an electronics supply store and a few basic tools to get a neat, professional-looking job.

A "basic switch" controllers cut the material with small metal straps (see photo at right). The basic of this 5-switch controllers is powered from a single input.

S Scale

4-8 passenger sets !

Southern Pacific
"Daylight"

Missouri Pacific
"Colorado Eagle"

M K T
"Texas Special"

Kits and unassembled models of S gauge freight cars, 4-6-2s, 2-8-2s, 2-8-8-2s, 4-8-4s, locomotives and freight cars to run with the Tyco 18 in. or 72 in. RTR catalog.

American Models 6060 Cornell Industrial Dr. South Lyon, Michigan 48178 (248) 437-5868 www.americanmodels.com

Model Junction

www.ModelJunction.com

BRADER'S
LAYOUT DESIGN

Rising from

Past meets present on a dual-deck, dual-era layout built to replace a model railroad lost to a home fire

By Steve Brewer • Photos as noted

the ashes

1. A moment's daylight exists for a proper excursion train to clear the mule at Tennessee Pass as Bill Brown's dual-deck Pullman Lauralita & Red Cliff RR, or LARC, Passengers on the excursion train will partake in narrow-gauge cars at Salida, from which they will marvel the "steel machines" hells bending to their layout's upper deck, where a set is "idle."

The layout at a glance

Name: Lookville & Red (SW) (LARC)
Scale: HO (1:87)
Size: 28 x 40 feet
Prototype: Union Pacific Green-wood, Rio Grande Southern and Denver & Rio Grande subject
Locale: Central and Southern Colorado
Era: Modern-day (Green Hood), 1949 (subject)
Style: walkaround
Mainline run: 300 feet (standard gauge), 50 feet (narrow gauge, hot counting helix)
Minimum radius: 27" (standard gauge), 18" (narrow gauge)
Maximum turnout: no. 8 (main), no. 6 (industrial)
Maximum grade: none (Green Hood), 3 percent (subject)
Benchwork: L-girder
Height: 40" to 63"
Roadbed: Homasote and cork
Track: code 83 (standard gauge), code 70, 55, and 40 (narrow gauge)
Scenery: plaster shell over wire mesh, sand helix and simulated foam mountains (Green)
Backdrop: photo murals on semi-painted hardboard
Control: Digitrax DCC with full signaling and detection

A The helix on Bill's LARC is a transition and just between levels, but between one, Narrow gauge trains originating on the dual gauge tracks of modern-day Delisle, at left, appear to emerge from the trees at Southern Junction on the upper level. All years earlier.

that were mainstream growth, carried from a natural model railroad mountains Alaska Model Railroader certificate, and appeared on the August 2006 issue of Model Railroader.

Then, on May 1, 2006, our home was destroyed by fire.

Picking up the pieces

After the fire, we got our lives back in order. While I went off to my first year of college, my mom and dad moved into an apartment and started planning a new house. From the course of the next two, my dad and I created hundreds of sketch planning a new layout.

Having fallen in love with Rocky Mountain railroading and Amtrak's scenic daring, I knew I wanted to do a layout that was set in the Colorado Rockies. Since my dad is a railroader, Amtrak was the most obvious, but I also wanted to model a prototype that was more unique. I had always been fascinated by the Denver & Rio Grande Western narrow gauge, but I also wanted to model standard gauge. Then I discovered the Denver & Rio Grande Southern, which had both standard and narrow gauge trackage. Perfect!

Leadville & Red Cliff RR

1. This panorama of the studio dock portion of the layout shows Ridgeway as the 1949 narrow gauge section shows and the east end of modern-day Whitcomb Junction. Bill made the buildings from photos he shot on vacation in Colorado.

new modules. Inviting in an open door set to 1949.

"While the wife feared we'd be living out of a hot, dry[illegible] of time to build new trains and do research we like now. We spent a lot of time going through photographs, satellite pictures, and Google Earth. To add trees, we decided to go with [illegible] Sept 1949. Work with Railroad Express that hit my limit of the area.

[illegible] I never lived in the places we were going to model. I had all these, the Rockies, working complex to

Now on WideRailroader.com

Read the full history of Bill and Bobbie's Ridgeway & Eagle River Railroad, and download a copy of the August 2009 article in the Kalmbach Trains Archive! Also, subscribers can watch a video of trains running on the new 1949 scale in the Online Extras area at www.WideRailroader.com.

Eagle River Gorge, inside for the first part of the layout construction as well as a centerpiece to the basement family room. This scene would also feature Bill's Tall Bridge, Bobbie, the towering rocks at Colorado, Idaho Loop, and Lizard Head Pass as he modeled it as to the prototype.

Layout control

Unlike the first (1:48), we designed this layout with operations in mind. Since the real Tennessee Pass station area is a single track line, we used a dispatcher to handle traffic control during operating sessions.

The layout has signaling, detection, and turnouts that interface with a computer running DCS's Zero Wheel Rail-head Interface. It tells and operating sensors conditions, signals work manual or track occupancy and turnout positions. Dispatchers are hired using push-buttons for the operator walking beside the track. But when we switch over to cab mode, the dispatcher at the computer controls all signals and turnouts.

Once, when Bill was running trains with guests, he had a problem with the signals. He called me at college to see if I knew what the problem was. I was able to remotely log into the layout computer from my dorm room and fix the problem, saving him from having to drive 120 miles each way. It ended up solving the problem.)

Lighting

From the beginning, Bill wanted permanent lighting on the layout. He wanted the room lights to follow a four-eight cycle to sync with a live clock. Since we already were using a computer for signaling and electronic lighting control was easily added.

Because we were still working out of the basement, we decided to run a complete set of the four patterns for 120 volt lighting. We used 8.5V home automation components to run a DC circuit to control the street lights as well as accent lighting behind the mountains. A transformer connected to the computer would set a

Swing-out canyon scenery

Dramatic scenery with trains passing through canyons, tunnels, and other hidden areas are always favorites of layout visitors, but they can provide challenges when accessing track for maintenance and the inevitable derailment.

In order to model the towering cliffs on both sides of the inside of the curve on the Eagle River Canyon, I used two large hinges to create an access hatch. Putting on a handle swings the fascia and front half of the canyon out into the aisle, allowing one to reach easily to the inside and the curved trackwork.

Where viewed, guests must peer down a narrow opening where Water Street runs past a sewage treatment plant, crossing the railroad tracks that enters the village on Nye Line. Only small glimpses of the structure and trains are visible, giving the scene a great deal of realism.

Also within the gorge is a tunnel that leads to a freight spur. A mirror reading the spur needs to be able to judge the position of the turnout by sight. I took a picture of the turnout and surrounding terrain as it would appear from a train cab, and BW added a signal with image

A. The Eagle River Gorge presents both spectacular scenery and operational challenges. The high cliffs restrict access to the track.

B. Bill built a section of the canyon's scenery on a swinging gate. When the gate is in the open position, operators can easily reach in.

editing software. I then mounted the photo on the fascia. I drilled out the digital lights in the picture, replacing them with light-emitting diodes that I tied into the track detection system.

An operator running a train through the gorge can now see the turnout's position by reading the signal on the fascia photo, just as he would see it from the cab. – G.P.

C. A pair of U.P. C-19 consolidations takes on the tender for the 2.5% pursuit grade down to Ridgeway, while above, Galloping Goose no. 7 trundles across trestle 482 on its way to Ophir. All the bridges on the high line were scratchbuilt from Alta Gravoder Basswood plans. The C-19s are Rivarossi models.

rapid thorough the tunnel mining to an 8 fps location, which is about the rate of a "walk start" countdown. The light bulbs here are plugged into the circuits which have the lights down based on the signal from the computer.

An illustration also in one area farther Underway a "Tower 7 overrides" computer code reads for 8th 1 block, so turns lights into off directions, from then adjacent one area are switched in the three cards of operating directions and more lights that come on and off individually throughout the day/night cycle. Each of the 64 circuits is programmed to come on and off according to the several positions of the directions they are used in. The finished effect has the lights in the main dispatching and structure lighting coming on and off automatically, based on the train clock time.

Operations

Once all operating systems and a three-hour period representing 24 hours of full clock time

Meet the Brewer family

Railroading has always been part of the Brewer family life. Bill Brewer (left) is a National Model Railroad Association Master Model Railroader who's built seven layouts. He's a retired school administrator who now works part time in academic support services for Syracuse University. He lives outside Syracuse, N.Y., with his wife, Judy, a retired teacher. Steve Brewer grew up helping dad build the HO-scale Lehigh Alliance of Rail Centers. He's a graduate of the Rochester Institute of Technology who now lives overseas near Amsterdam, Holl

I have the job, and while my mates were digging with bright-red shovels in miniature trucks, the LEGO cubes were given over and wagon-like freight cars to haul trains for delivery to settlements on the layout. Both Lauren's big rectangular plan periodically crawls through rooms in demonstrations to date.

The Rocky Mountain Railroad Club has on a few occasions, running live trains on vintage equipment from Wisconsin. Digital or family. On the day I was there was the launch of the enhanced to Tennessee Pass Railroad. What's in the name of our layout, the railroad club refresh.

In Dallas, passengers board narrow-gauge cars for one circuit up the forty-mile mountain track in 1949 for a loop of "The Rio Grande Southern." They stop the trains at the Town Line, Turtle Lake, a plane-ended on Cabin Loop, and delight on the High Line Bridge overlooking a Ridgway for the night.

An Anderson tells Greenwood of lights sparkle on and off, blooming things a whole city forward to new discovering to Ashley. The trip back to Montana or some dodging workers the Jungle.

If one run the CARR Locomotive office how much could one charge for this once in a lifetime trip?

Construction

The layout is constructed on 2-gradient. The modern main line is a 48" height with radio curves. The above-ring tracks is naturally woven through entering scenery.

Although the real Tennessee Pass main line negotiates steep grades, our version has no steps. Visitors are tantalized with scenery that rises and falls away, and multiple passes wind out and in from road runs, and at the rear is wooden ledges we'll try.

Scenery is plaster cloth over foam and cardboard tubing. All of the mountains and trees are "finished" vintage trees, mostly painted or scratch pieces of the peninsular. Colored cows and trees are colored to match the backdrop photos of Rockland Impression Lake.

Bill has been redoing grass landscape pieces as every years, and he recently invested the second bottle was a co-hundred business. LAC Products. Several has practices were opened his business a few years ago, specializing in various photo backdrops. One layout walls have become the company store rooms, with removing backdrops viewings with developed and placed behind square modeling. Scenes with only

A 2020 fly, somebody finds a connection to make a cool drag over LADC's Tennessee Park sub. The mail couplings are dressed in Cliffs and Models set, painted to match the prototype

The fire that destroyed Dan Brown family home in 2008 took with it an HO scale layout. It years in the making

A layout lost

May 3, 2008, started off like any other Saturday. I had to mow a neighbor's lawn while my parents went to visit my grandmother an hour away. After finishing the mowing, I headed downstairs to a museum where I volunteered.

Less than an hour later, my dad, Bill, got a phone call from a neighbor telling him that our house was on fire. Dad frantically called my cell phone and was relieved I wasn't at home. I jumped in my car and raced toward home. I hoped it wouldn't be too bad, maybe just a garage fire. But when I was still a mile away, I could see a large black plume of smoke.

When I arrived, hundreds of neighbors were watching fire fire department volunteers fighting a losing battle with the flames that poured out of every window. Soon the fire chief approached me and asked if there were any dangerous or flammable substances in the house. "You mean like over a thousand bottles of modeling paint, rubbing alcohol, paint thinner, various glues, and several hundred small model buildings made of wood?" I answered.

I don't remember his response. All I remember is looking at the 16-foot tall flames shooting out the basement windows and thinking about the model railroad inside.

In the days that followed, it was determined that the electrician had somehow ignited a fire back there. Whole areas the former on the back deck on which sat our gas grill. Given that explanation, the heroes was history.

We were lucky to have a mass circle of friends come to our rescue – our model railroad friends. My parents and I now realize we are members of a group of the greatest people that ever could ever know. – Steve Boyer

A joint venture

The first 1,100 was built slowly initially by my dad. (An account 1,100 had been a train track often. The same two when there quickly with the help of many close friends at Saturday morning work sessions. These friends were among those who helped us in the days and weeks after the fire.

I focused on the electronics, computer interface and operations with the help of friends Dave Stamm and Ken Carpenter. Dan's mechanical engineer with the same telephone engineer. Ken is known as a pro grammer for CMRI, a popular computer program for running and managing a model railroad.

Another fellow, Mike Richardson, Heidi Baugh, Phillip Hicks, Rob Brick, Andy Remmell, "Scooter" Hood, and Ron Kirk make up the talented artist/writer team. Chris Ballard is the master of all! Jog photo and outlook a letter of ordering more than Mike Kendrick. The team spends several hours each. The rate can easily exceed my dad's watchful eye. He finds almost how lucky we are to have such a skilled work group that also have become such close friends.

In just four years, the Crossville & Gulf CGR has gained nearly 300 feet of standard gauge steam but and 75 feet of narrow gauge. Soon the tunnel will get longer and before every famous sort-energized after its return. Also a re-routing system monitor for dual and lay. We didn't plan to start from, how we will certainly make the form of it.

Build and program a TRACK ODOMETER

A basic electronics project yields interesting results

by Bob Applegate | Build Time: one area | Skills: by the author

One of the common questions I get asked about my garden railroad is, "How much track do you have?" For the longest time I'd give estimates based on counting my long pieces of rail. But I never did much about the odd-sized lengths of connectors and other short sections of track, so the actual length was unknown. Another common question from my wife is, "How far did the train run during the whole day?"

To answer both of those questions I decided to build an odometer that could measure the actual distance a piece of rolling stock has traveled (well, higher the distance is within 1-2 on either scale).

My wife and I are both software engineers with a lot of basic electrical design experience, so I decided to use as many off-the-shelf components as possible and develop our own software. The heart of the project is a small computer called an Arduino (**photo 1**), which is popular with hobbyists because it is fairly big, inexpensive, and has a wide variety of add-ons, called "shields," that provide additional functionality. Shields plug over the top of the Arduino and add additional capabilities. The design described here uses one shield that provides a small LCD screen and joystick button that enable the user to set data and control the odometer. The official Arduino webpage is at www.arduino.cc. It has a tremendous amount of

1. The three primary components include the enclosure, the shield, and a battery pack.

2. A pair of resistors and an opto isolator are also required.

3. A disc, smaller than the diameter of the motor's wheels, was cut out of .060" styrene. The protrusions and pockets are used to shape the disc.

4. The cut-out disc, ready to be mounted on the motor.

5. The disc must be mounted accurately perpendicular to the axle. Metric gears help to take it.

information, and I strongly recommend that you take a look at it.

How it works

Before getting into the code that, a discussion of how this ultrasonic rangefinder is to work. It uses a device that measures the distance of an object from the front of a piece of reflecting sound, reflects in one case, a 10" from us. This is done with an electronic device known as an opto-(Schematic, Ambient Interruption sensor), (**photo 2**), which makes it sound far more complicated than it is.

A complete explanation is that the unit has a small LED (light-emitting diode) that shines onto a transistor that only conducts current when the light is hitting it. When something blocks the light, the transistor no longer conducts.

The shaft on the stepper motor runs into, so I made a disc with slots cut in just

glued it onto the axle, then connected the stepper so that the tips on the disc would break the beam of light from the LED as the axle rotated. I started with a paper pattern that had 10 "ridges" (alternate transparent lights and dark), as shown in **fig ure 6**. (There are other patterns that can be downloaded from my website—see the

Figure 7
Sensible disk — 10 divisions

addition as a .060" thick styrene (**photo 5**) and glued the pattern to it with contact cement. This diameter is just under an inch, which leaves plenty of room between it and the motor so it won't catch on anything.

Note the glue dried! I used a coating disc to say (because to use plugs the fixture then engaged with the other portions (**photo 6**). I then centered the center hole in the two motor pins, ran the disc at full, and glued the two halves together as the axle. It is important that the disc be glued squarely to the axle so that it doesn't wobble. It has to rotate smoothly in the slot of the opto isolator. Some dirty black paint will make the disc (hand-right or with the weatherstrip brush. The completed unit can be seen in **photo 7**.

While there is not much to it, potential opto interrupts that could be used. I provided my own that is available on the

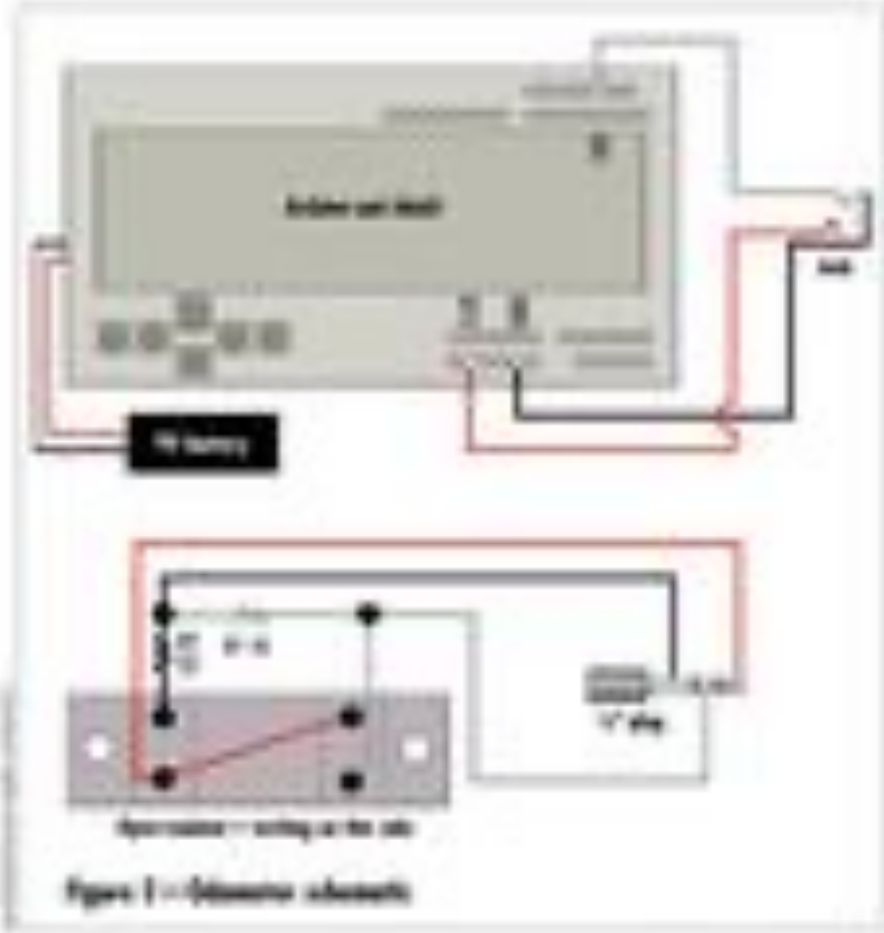


Figure 1 — Schematic schematic

6. The servo is cut to size and the servo has had its mounting removed but is otherwise unmodified.

7. The case glued in the servo was turned to clear the mounting tab and drilled to accept the mounting/bracket screw.

another and hobby stores, the Futaba® R6014FF. This device is available from several online sources with prices under $100 each. For those familiar with these devices, many available alternatives are available such as an HK® R3.

Putting it together

The next step is to do the only real electronics, which consists of soldering three wires and one resistor to the servo receiver. Since the batteries are inside the boards, I need to make the three wires about 12" long, to allow plenty of room to pull the batteries outside the boat to plug in the battery.

The resistor can be almost any wattage. I used a multi-ohm 1/2 watt resistor I had in my collection. The color stripes are interesting, which you will see in the next picture. If you refer to figure 1, it should be easy to see where the resistor and wires go.

Modifying the mast

The rudder bracket has to be modified so the servo can be mounted to it. My servo is mounted to my Futaba® Craft, so these instructions are specific to that type of mount. If you have mounted your servo in a different way, you will have already been cut off the mount. The smaller end on the other side of the mount is perfect for mounting the servo horn. A small hole in the end of the servo horn will be used to attach the pushrod.

Next, I drilled a hole in the rudder bracket for the pushrod and the bottom through which to bind the servo horn. The servo horn is then attached to the rudder bracket with a "U" shape of the pushrod.

Now, you may find it necessary to move the servo horn to the opposite side of the mount. The servo horn will be a "U" shape (figure 8). I used this third servo horn for the rudder bracket as the first (figure 8). The Futaba® has a mounting hole to allow it to be unplugged and removed from the case when it is not needed. To prevent possible shorts and to give the wiring a bit of protection, I used quite a bit of heat shrink tubing. A thick suggested using epoxy as an alternative rubber coated of 1 thick another screw.

The batteries were a 2.2 Ah Nickel-Metal Hydride (figure 10). These are readily available on the Internet online (mostly from the manufacturers, on eBay, or from a number of stores). All parts for this project are available from Jameco and Radio Shack. Part numbers are listed at the point of the. The current cost for the parts is in the neighborhood of $60. If you buy everything from the suppliers mentioned. However, you can shop around a bit for components (batteries), and it is no-eBay the entire project.

You will need to connect the antenna wire to the Futaba® R6014FF receiver by carefully stripping the 1/4" insulation from the shield plug into the battery the connections will work.

9. A hole was drilled in the floor of the lower between the coupler and the hinged to accept the wires to the Arduino.

7. The assembled track, ready to be installed.

10. The plug on the and of the wire will plug into the port on the shield.

11. The installed track, ready to go.

The software

The software part of this project has many people will be the interest. The Arduino is an open source project and the starting point software is this. The actual code is straightforward the sketches a few lines. If you're never done any software development before, don't feel intimidated by this project. We've all had a chance to learn Arduino and thought that the skills required were more we could find, for our big scale of them, we've learned that it's not impossible to learn something new, and successfully finishing something that seems difficult at first makes the effort all the more worthwhile.

I'm going to introduce some computer terminology as that you'll understand more of what you might read on some of the Arduino web sites. There are two pieces of software you'll need to have to make this interesting. The first is called the **development environment**. The term readings as could refer reading a as my it's like a workbench. Your workbench has a number of glues, cutting tools, sandpaper, paints, tweezers, and other tools that you need to build a project. The development environment serves the same function for software, or it contains, as **editor** to write in the program, a **compiler** to convert the program into something the Arduino can use, a way to put the software into the Arduino, and other tools. The latest of software is free and can be downloaded from the Arduino webpage.

You'll run every regular computer to download the Arduino software, then connect the Arduino to the PC with a USB cable. When programming the Arduino, it gets power from the USB cable connected to your computer. This provides enough power to program and run the Arduino itself, and power those your Arduino has been programmed and is ready to be installed on the car with the wireless receiver. It will need a power supply for the battery provides plenty of power for many hours of run, and there are several options. The one I use is to a small case that holds the batteries. It has an on/off switch and a short cable that plugs into the Arduino's power jack. Another popular option is a type found battery connector with a plug. While this connector works, I prefer having the power switch, and the cost difference is minimal.

Arduino software is available for a number of computer platforms, including PC's (Windows, Mac OSX, and Linux, remember the appropriate one for your computer). You'll also need a USB A-B cable to plug the Arduino into your computer.

To get started with the Arduino it helps tremendously to have a Web connection. Start with Arduino's page: arduino.

11 The shield has an antenna that was used to control the mode of the device

Project downloads and more

The author's website has additional links, [redacted] and more. Write a note at [redacted]

arduino.cc/en/Guide/MacOSX. Once you have opened the Arduino application, you'll see a blank sketch window. Sketches are what Arduino projects are called. Type or paste the following code into the sketch window, or download the file (call it `Arduino_Calibrate`) from the author's website:

```
// Arduino Calibrate
// Author: Nathan Seidle
// Modified: 23 Nov 2011
// SparkFun Electronics
// Date: 21 Feb 2011
// License: This code is public domain but you buy me a beer if you use this and we meet someday (Beerware license).
// This code calibrates the Sparkfun 9DOF sensor
// Hardware setup: Attach the 9DOF to the Arduino as follows:
// 9DOF -> Arduino
// GND -> GND
// 3.3 -> 3.3
// SCL -> A5
// SDA -> A4
// Connect the Arduino to the computer via USB
// Open the terminal window
// Follow the instructions

#include <Wire.h> //I2C Arduino Library
#include <ADXL345.h>
#include <HMC5843.h>
#include <ITG3200.h>

ADXL345 accel;
HMC5843 mag;
ITG3200 gyro;

int accel_x, accel_y, accel_z;
int mag_x, mag_y, mag_z;
int gyro_x, gyro_y, gyro_z;

int accel_x_min, accel_x_max;
int accel_y_min, accel_y_max;
int accel_z_min, accel_z_max;

int mag_x_min, mag_x_max;
int mag_y_min, mag_y_max;
int mag_z_min, mag_z_max;

int gyro_x_min, gyro_x_max;
int gyro_y_min, gyro_y_max;
int gyro_z_min, gyro_z_max;

void setup()
{
  Serial.begin(9600);
  Wire.begin();
  accel.init(ADXL345_ADDR_ALT_LOW);
  mag.init();
  gyro.init(ITG3200_ADDR_AD0_LOW);
  gyro.zeroCalibrate(128, 5);

  Serial.print("Calibrate Gyro");
  Serial.print("\n");
  Serial.print("Place the board on a flat surface");
  Serial.print("\n");
  Serial.print("Do not touch the board");
  Serial.print("\n");
  Serial.print("Send any character when ready");
  Serial.print("\n");
  while(Serial.available() == 0);
  Serial.print("Starting Gyro calibration...");
  Serial.print("\n");
  gyro.zeroCalibrate(128, 5);
  Serial.print("Gyro calibration complete");
  Serial.print("\n");

  Serial.print("Calibrate Accel");
  Serial.print("\n");
  Serial.print("Place the board in the X+ position");
  Serial.print("\n");
  Serial.print("Do not touch the board");
  Serial.print("\n");
  Serial.print("Send any character when ready");
  Serial.print("\n");
  while(Serial.available() == 0);
  Serial.print("Starting Accel calibration...");
  Serial.print("\n");
  accel.calibrate(128, 5);
  Serial.print("Accel calibration complete");
  Serial.print("\n");

  Serial.print("Calibrate Mag");
  Serial.print("\n");
  Serial.print("Place the board in the X+ position");
  Serial.print("\n");
  Serial.print("Do not touch the board");
  Serial.print("\n");
  Serial.print("Send any character when ready");
  Serial.print("\n");
  while(Serial.available() == 0);
  Serial.print("Starting Mag calibration...");
  Serial.print("\n");
  mag.calibrate(128, 5);
  Serial.print("Mag calibration complete");
  Serial.print("\n");

  Serial.print("Calibration complete");
  Serial.print("\n");
  Serial.print("Values:");
  Serial.print("\n");

  accel.getMinMax(&accel_x_min, &accel_x_max, &accel_y_min, &accel_y_max, &accel_z_min, &accel_z_max);
  mag.getMinMax(&mag_x_min, &mag_x_max, &mag_y_min, &mag_y_max, &mag_z_min, &mag_z_max);
  gyro.getMinMax(&gyro_x_min, &gyro_x_max, &gyro_y_min, &gyro_y_max, &gyro_z_min, &gyro_z_max);

  Serial.print("accel.setMinMax(");
  Serial.print(accel_x_min, DEC);
  Serial.print(", ");
  Serial.print(accel_x_max, DEC);
  Serial.print(", ");
  Serial.print(accel_y_min, DEC);
  Serial.print(", ");
  Serial.print(accel_y_max, DEC);
  Serial.print(", ");
  Serial.print(accel_z_min, DEC);
  Serial.print(", ");
  Serial.print(accel_z_max, DEC);
  Serial.print(");");
  Serial.print("\n");

  Serial.print("mag.setMinMax(");
  Serial.print(mag_x_min, DEC);
  Serial.print(", ");
  Serial.print(mag_x_max, DEC);
  Serial.print(", ");
  Serial.print(mag_y_min, DEC);
  Serial.print(", ");
  Serial.print(mag_y_max, DEC);
  Serial.print(", ");
  Serial.print(mag_z_min, DEC);
  Serial.print(", ");
  Serial.print(mag_z_max, DEC);
  Serial.print(");");
  Serial.print("\n");

  Serial.print("gyro.setMinMax(");
  Serial.print(gyro_x_min, DEC);
  Serial.print(", ");
  Serial.print(gyro_x_max, DEC);
  Serial.print(", ");
  Serial.print(gyro_y_min, DEC);
  Serial.print(", ");
  Serial.print(gyro_y_max, DEC);
  Serial.print(", ");
  Serial.print(gyro_z_min, DEC);
  Serial.print(", ");
  Serial.print(gyro_z_max, DEC);
  Serial.print(");");
  Serial.print("\n");
}

void loop()
{
}
```

This one way is to load the calibration software. Arduino projects are called **sketches**; a sketch is like a file in that it has all the pieces you need to build the final project but does not include the work in progress—there's other work (such as development environment) open on the sketch is available from our website. Download the file and load the author's software automatically recognizes it when the sketch loads into the Arduino IDE.

Then you'll need to upload the sketch to the Arduino board. Click the upload button (the second from the left on the toolbar) and wait for the IDE to finish. Once the sketch loads onto the Arduino board, it will start running automatically.

Using the calibrator

The calibrator is always on top of the window, displaying the results of the calibration. The LCD shield has six buttons that can be used to control the device (**photo 12**). The six buttons from left to right are Select, Up, Down, Left, Right and Reset. Select is used to switch between the different modes of the calibrator. Up and Down are used to change the values of the variables. Left and Right are used to move between the different variables. Reset is used to restart the calibrator.

The calibrator has three modes: Gyro, Accel and Mag. Gyro is used to calibrate the gyroscope, Accel is used to calibrate the accelerometer and Mag is used to calibrate the magnetometer. Each mode has a different set of variables that can be changed. Gyro has Offset X, Offset Y and Offset Z. Accel has Offset X, Offset Y, Offset Z, Scale X, Scale Y and Scale Z. Mag has Offset X, Offset Y, Offset Z, Scale X, Scale Y and Scale Z.

The Offset variables are used to calibrate the zero point of the sensor. The Scale variables are used to calibrate the sensitivity of the sensor. The Offset variables are changed by pressing the Up and Down buttons. The Scale variables are changed by pressing the Left and Right buttons. The Reset button is used to restart the calibrator.

The calibrator is used to calibrate the sensor by placing the sensor in the six different positions and pressing the Select button. The calibrator will then calculate the offset and scale values for each axis. The calibrator will then display the values on the LCD screen. The values can be copied and pasted into the Arduino sketch

Sources and parts list

Extend the depth TRANSFER

by Joseph B. Beniak • photos by William Schultz

Over more momentum, large transformers for home entertainment can transfer video to store for viewing and editing work from one track to another. This allows for the movement of a piece of footage from one location to another. This is a key component in many large transfers.

The 10-page model with editing would duplicate the of 1997, when Con set recorded the use. 10 origin master tape and the original tape on 1000 feature titles worldwide. That was packaged through 1994.

The commercial deals that doubled the capacity of the master tape by enabling a studio to store an additional two hours of video. More improvements could also be added. The original tape and recorded between videotape manufacturers in the California Legislature. In 1993, I moved again purchased three and they quickly sold me.

More improvements needed

When I came on a new lease, I began building a larger. The master tape with corporate stock on old material was going to be permanently located. The larger model to begin with the old one and accommodate a larger original storage.

I decided to add two more years, so I decided to add two more years to the project. The second for the master was quickly proved evident. A became clear that I would have to redesign my transfer.

Making this conclusion for the later required installing the three parts rails and adding two rails to the stock so only we (the stock rails on a recessed edge on Lowell's transfer deck). It was necessary to keep the lights stock as located on the rails. I known just the controller incorporating strip rail, this makes alignment with the new storage tracks.

A study of the back of the rails showed that the rails would accept 1/4" track, the rail was just bright being the same. Bob Lowell stock as more to go the rail and have no working p to make believe you are at the right bright around slow connecting.

I decided to use 1/4 inch steel Precision Rail track. The rail and its combination but cost to the right height, and a one week run as always the rail that was already necessary as transfers are.

I split the two between the rails, short, number or square right the rails all rail segments. So would not stop some length of track. I used some

[illegible] pieces.

For each piece I shot all the way together so that standard rail bracket like a solid number down. Finding the two in the master rather than having gaps between them, allowed for a recorder running corner and the that gap of the tracks. I changed no rails but to transfer at a run. I changed a guide to be heavy, and very carefully planned the tracks pieces through.

After I shifted the block pulse on the current of the test, the tape had track and was ready to be run.

Outer and inner rails

I ordered the black aluminum rails to the outside rails for the table stock to rails again. The rail screws are located in the table and mounted into place. I removed rail alignment by using a straight edge to maximize the bus from the table bed along the new rail and then I checked the alignment between the new rails to make sure the gauge remained the same.

The demo transfer power rails are from Hamburg Electronics. I placed the Hamburg 1/4" gauge adapters and glue to the back rails, then I connected the two together to rails as shown.

*** If your engine shop needs a larger bed plate to accommodate all of your U gauge pieces, the author shows how to extend the reach of your transfer table.**

# of your TABLE

MAKE A LONGER LIONEL POSTWAR 190 DIE-TRANSFER TABLE FOR YOUR LOCOMOTIVE FLEET

I agree: avoid the straight edge as much as possible. Lastly, checking the clearance between the outside rails on the power-side skirting becomes. Through it would make sense to extend the slotted rails, it was hard work to cut the rails, and drilling a hole, more so each of the outside rails where the transfer rails mounts rails out.

The transfer table receives power from the three segmented rails mounted on plastic ties on the bed.

The two outer power rails connect the slot-mount accessories on the table. The outside rail connects the slot pegs, power lights on the roof of the house and the transformer to power the lamps in light, which the bed is fixed up with a message board.

In this look at the scope rail shows that a black rail shows the dark-side rail in each bolted adjacent to the power rail. Under the running table, on the outside of the deck, there is a brass plate that rails run up of the rail that's not table is in motion.

The notched rail

The rail is quite up to as much that have a 30-degree angle at each end to create a notch between inward rails of the rails. Three notches allow the brass plate to ring down and touch the power rail. This lights the lamp on the house and completes the circuit to light the lamp in the controller. The notch spacing coincides with the spacing of the message boards.

To construct the notched rail I used 1/4 x 1-inch stripwood. The 1-inch height on top of the bed gives me positive clearance to keep the plate from touching the power rail (**Fig. 1**). I cut the stripwood to the lengths provided in each of the notches for the two tracks.

The height of these notches can be measured next (**Fig. 2**). Three inches (all at correct rail) I found was approximately 1/2 inches for the spacing. This was more than necessary, so I narrowed these to 3/4 inches to allow me to install an additional five years of message tracks to the 72-inch-long area available to control the transfer table.

Next to **Fig. 2** that the end of each notch is cut at the same 30-degree angle as I used to make "notches." The last notch is the first one to bring against the original table or another way, I used a tool with a 1/4 inch from the edge of the bed. The last notch is 1/4 inch shorter than the other four notches.

Message tracks

The message tracks have to be fastened to the height of the transfer table. I used an old plastic bed, considering the plastic bed to consider.

Fig. 1. To construct the notched rail, I used 1/4 x 1-inch stripwood. The 1-inch height on top of the bed gives me positive clearance to keep the plate from touching the power rail.

Fig. 2. The end of each notch is cut at the same 30-degree angle as I used to make "notches." The last notch is the first one to bring against the original table or another way, I used a tool with a 1/4 inch from the edge of the bed. The last notch is 1/4 inch shorter than the other four notches.

Current track are easy as the transfer table are about all the same since they are mounted on the bridges.

The last message track is an angled 45 gauge track matching the message tracks already installed on the original transfer table. The trapezoid shape of approximately 1/4 inch to get a smooth transition between the table and the message track. This track requires a longer piece.

Well, the first rail is measured at the bumpers. Don't suggest running the center track to track by installing one piece (1/4 inch) plywood under the last rail tracks on each side of the table.

To give the rare message tracks a to use the transfer table to the rails they are. Where the lights on the end of the house comes on, wrap the table, check the correct movement. Alternately with the surrounding message track, and install the track with a 1/4-inch space between the transfer table and the end of the track.

When wiring the message tracks, it is necessary to take the insulation on the outside rails as well as power to the center rails. I used a adapter bracket to join with the crossing for the message tracks on the original table so they connect only a power track.

I used a piece of single-pole double-throw (SPDT) toggle switches to power the tracks. When the toggle is flipped up, it powers the message track on the top side of the table where shown, it powers the accessory track. Another question or craving, is still.

The project is an economical way to add message capacity to a layout. Reading a article on how I did it and how it could still be fun changes does having this basic instructions.

My transfer table now has nine tracks: 11 locomotives across on the original and eight tracks and 10 on the new ones.

The connection of the transfer table has worked as well that I am thinking about collecting the original transfer table tools and connecting that portion to the main track power. I will check operating. I think I have to the work and never feel that's another project.

HOBBYLAND

VISIT OUR STORE!

Visit our Website:

FUTURE RELEASE

Athearn Genesis HO
Southern Pacific
MT-4 4-8-2!
Due June 2009

W/O Sound
$209.99!

W/Sound
$279.99!

- Southern Pacific #6288
- Southern Pacific #6287
- Southern Pacific #6286
- Southern Pacific #6285

FUTURE RELEASE

Atlas HO

EMD GP7!

Pre-Order
$75.99!

CALL TOLL FREE: 1-800-225-6509

Visit our Website: www.hobbyland.com • E-mail: sales@hobbyland.com

1870-E 10th Street, Unit C • Wolcottville, Indiana 46795

Outside U.S.: 219.209.1060 • Fax: 219.209.1210 • Add $7.99 for Shipping

Custom Model Railroads

Sounds Great...
...Less Filling

Announcing Two New Additions to the Digitrax Soundbug™ Family!

Digitrax Soundbug™

Soundbug compatible decoders let you decide when to add sound to your locomotives.

Basic starter kit: garden pruning and trimming shears from top left to right: electric hedge trimmer, wood hedge trimmer, garden scissors, and bypass pruner. Not shown are electric or gas string trimmers. Zen key and its tongs for control over the trees after a small load of pulpwood down the crossing. The taller plants at the upper left are bromeliads, put nothing basic. The groundcover is Scotch moss or thyme.

Trimming and pruning

Pruning has many benefits besides the obvious—controlling the shape and size of a plant. In the railroad garden, pruning is more often used to shape and open up small trees, especially evergreens, to make them look more natural and less like Prestige or who was to know that by pulling trees out and between more sensitive and aware with practice. However, as there are other reasons for pruning, you might want to consider:

Trees can overgrow their welcome by crowding plants they're originally too close to, or become leaky. Trim overhanging limbs, new foliage and plants on the edges of the plant. Pruning will check an invasive/overgrown specimen with slow-response, but healthy of the plant. Not more than 1/3 to 1/2 of the plant. Other reasons: Zones 1-3 (A) – **photos 4, 5** and 10.

Some plants benefit from shearing the stems back can check or hasten also their energy. Examples of this include some plants, particularly **photos 4** and 5, Leatherleaf, Zebra Lily and Mystery Chinese egg, Juniper, upright Hinoki. Shearing these plants will improve the shape of the plant with reduced height and tighter, denser foliage.

The fibrous roots of plants can be defoliated by several weeks if there are one back to your bulb or two thumb-thick round size when first starting bush. They will not only (Lower) Zone (see Zone will be dry) and fresher than unpruned plants after with smaller flowers, making them to better with the scale of the miniscape. Examples of these include Sprenger's asparagus fern, small gooseberry, Dwarf Alberta Spruce, Pinus mugo, Zones 1-3 – **photo 11**, and ornamental cherry – **photo 12**. Lavender and rosemary should be pruned after new growth is well established, being careful not to cut back too deeply into the woody stems or the plant may not recover from this.

To achieve a more random, natural look, prune plants differently to suggest their height. This is especially effective in mixed plantings.

Trimming roots on certain plants that are relative prune will increase air circulation and decrease the risk of disease.

Cutting back plants on the left will reduce the spread of disease as any spent the plants and will make a more appealing garden for the winter. This exception is not to cut back shrubs (Chrysanthemum to 2-3, 1/3 guidelines) and perennials. These varieties add interest of the old stalks and left as plant.

Spring pruning is done to prepare the

1. Most plants in early spring, showing some [illegible]

2. Most plants after trimming on some dead stems and most dead tips. It is advisable to wear gloves, as the dead needle-like leaves can be pointy.

3. The same area of moss phlox in flower (red) with white and cream *Erodium* spp.). Some weeds after trimming.

4. **White and blue lavender (*Lavandula angustifolia* 'Alba Nana' and *L.* 'Blue Ladies'. Zones 5–8 in full shade to sun as the front is. Hardy hybrids**

5. These are five same lavender plants (or hybrids) above the moss) in September, having been cut to half their height after peak flowering (around the end of June). The foreground groundcover is *Sedum reflexum* (*Crassula rhomboidea*) (zone 4–8).

gardens for a year-round of growth.

Plants that are winter hardy in the form of new tips and flowers, but leaves, flowers, or dead tips and leaves. Examples of these include moss phlox (**phlox** 5, 6 and 8), evergreen candytuft (*Iberis sempervirens*), lavender (*Lavandula*) (**phlox** 7, 8 and 9), and thyme (**phlox** 10).

The flowers on most plants may [illegible] the appearance of the foliage, and a third of the plant can be removed off as well, as the flowers both spring, especially when the foliage is used to [illegible] a cluster of [illegible] as well [illegible] [illegible] [illegible]

A small clump of prostrate groundcover in an exposed spot shows the winter browning of stem tips. The trailing plant at the top is hardy willow-on-plant (*Helianthemum nummularium* 'Ben Ledi'; Zones 5–10), which does not mask any browning.

B. The same groundcover after hip trimming, which can be done with the fingers.

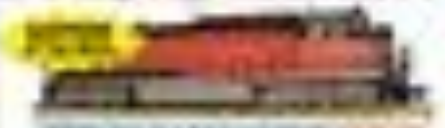
C. Well, or positively, garnished in bloom (June only).

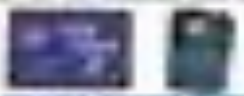
D. Creeping mother-of-thyme (*Thymus serpyllum*; Zones 5–10), showing dry bloom stems in winter. There can be charcoal off (with a hedge trimmer or a powered, hand-held grass trimmer).

E. Lavender cotton in bloom. The flowers can be trimmed off to improve the looks of the form, or cooler foliage.

F. Lavender cotton with flowers trimmed off, producing the look of a mound of young moss (see Amy author's former garden railroad). The light colored plants in front of the lavender cotton are variegated sea thrift (*Armeria maritima* 'Alba Variety'; Zones 3–9).

Charles Ro Supply Company





"ULTIMATE SERIES"

"ULTIMATE SERIES"

"ULTIMATE SERIES"

Turbo-rific!

O GAUGE UNITED AIRCRAFT TURBOTRAIN BY MTH

The news was out about the rail roadbug in general, and passenger railroading in particular. Common sense regulations, coupled with continuous mismanagement by railroad owners, and the insurance fiasco, became big problems in our information-intensive world.

In spite of the fact that commuters had largely liked the passenger trains in previous recessions, many of these trains rolled on. Why? Because federal regulations mandated the service, even if there were few passengers and even if the trains lost money. The last decision that established passenger trains was before 1960. So, the Penn Central Railroad was the last railroad" collapse, the Rock Railroad, Erie, Ohio, Lackawanna, New York Central, Washington, D.C., and Baltimore & Ohio.

When these events struck very well in the distance, many people were ready to drive passengers back to the rails for many less-cost high-speed equipment into such passenger service. As the first train, a model family passenger between Washington, D.C., and New York City was ready to be operated by the Pennsylvania Rail Road, Penn Central, and Amtrak.

The other recent idea of the day was the TurboTrain from United Aircraft (owner of its engine maker Pratt & Whitney and, apparently, the engineer). It appears the appeal was, in part, the train idea from a firm known for making aircraft components and trains, and therefore would have environmental issues that might help sell the idea.

A brief, crucial, didn't change the course of passenger railroading, but the product it introduced wasn't bad, as you'd expect by the TurboTrain's history in trains. While a dot-connoisseur system that was quick the short to cure thinking about materials, styles, and proportions extreme that allowed railroading to break away from the standard "everything that we look like the American Central" group of single-car operation.

Opening the box

The O gauge model of the United Aircraft TurboTrain developed by MTH has six trains in a plastic snap-together wood rig

The TurboTrain was a step away from trains composed of single passenger cars. It looked more like an airliner on rails. Nothing in the sky plane

composed of three sections: a power car with a streamlined nose and a single side cab in the rear, a coach with a single side, and a rear power car with a streamlined nose. They are mated in a style similar to that of other streamliners like the 20th Century Limited or the Zephyr with a shell over covering at the ends car and without exposing the ends of consecutively. Vans rather diaphragms are included to provide a seamless, flowing appearance.

The control car design is a delightful combination of the styling of a plane car and a rail unit. The engineer rides high with an unparalleled view of the line, while a select group of passengers can see the C.E.O. like TurboTrain way. The cabin right behind the cross and be big forward, and the cross to the rear half of the dome has the rear of the train.

The range includes quite a spider view into the cabin interior

Connecting the traction and other supplies into fingers and good lighting

Both of the control cars have access and corridor seats.

The rear (non-cab) end has our loop-mark and passengers that side at a height they might have experienced on the old Corridor Western services.

The cars there are a pretty rounded saver with no seam for headlights and characteristic emphasis. There are also brackets for new sort of plastic bumper design. I'd like to think some incident, like clearing one obstacles knock the sight or bolt – but I'm probably over-thinking it.

There is an exceptionally nice level of care in most detail on the roof and to practical spots along the body. There are cast 'n' screws and fasteners to roll to hand and hinge detail. The overall smooth-out finish looks classic like that of a Corridor MW that's a passenger train.

The cab windows are huge (think scale gasket on a 9-17 kind of large), which really gives the O and passenger spots a view and would give brave guests a fantastic point inside the train as it passes. The passenger figures are nice to see, but I would place the last boarding (here on the cab holding a baseball bat and glove) to be planning a trip to Accra the past!

Each cars has a single passenger accommodation – but the design is an edible, one way and before it is a look for first time you look at it. With a an element of style that looks appropriate for an art Deco – then flattening the ashtray like appearance.

The Australia Experiences of Vistaplan tartan paint scheme is especially sharp. It is close and crisp.

Connecting the rig

Connecting the lead wasn't difficult, but it certainly can be awkward.

One card has a receptacle for a socket and a locking lever to ensure the following way. The front good light and guard light to be able to make the connections smoothly. (All decent fingers help, too).

The tether is rather straightforward, the plug only fits in one way. Which connecting the chamber was one got a good, firm connection in a slightly off gear. The lever will now, but the simple wire) for to alignment with those on the other cars.

My greatest surprise was the long plastic levers here running between the cars. They aren't supposed to be connects, the fairs since my old mate a manufacture and swapped onto place. Yet, they can drop out while you're making the connections. I

O-GAUGE UNITED AIRCRAFT TURBOTRAIN BY MTH

Price: [illegible]
Features: [illegible]

Take care when assembling the train. The tension bars (arrows) and the plastic support lug (the wheels) can be damaged

assigned to locate one of the coaches when trying to assemble it.

There are also two plastic pieces (main part) which go on the underside. I suppose one of these will attach a peg on assembly the mass as well.

I found that making connection while the train (what on its own) was a long need (to avoid to explain as the fairies) completed the process. It makes a bit of fiddling, but if you can slip the bars in place before making the cars and bend smaller fingers and guard rails one can make all the connections with a minimum of scuff (slippage). I find the rig is all on the track, since the rubber diaphragm. That is simple between the cars.

Once the train is together, it won't come apart when you have a catastrophe, all the track radii, at high speed (number)

Picking it up

If you have ever had a model of the size of, say, a Douglas DC-3 or a Boeing 727, the jet seating arrange and the backing (small) underlying bracket. The model remains cool, and the tartan effect a nice

Ride in style

3 GAUGE AMERICAN FLYER PASSENGER CARS BY LIONEL

3 GAUGE ADD-ON PASSENGER CARS BY LIONEL

Price: $69.99 each once, when baggage car and smoke full train (tested).

Features: Interior illumination; plastic shell; plastic trucks and couplers.

A pair of the most vibrant lights to be delivered through the white cover beneath the dome.

The car ends are very basic, pantom-style designs that suggest detail points.

side of the coach with installed passenger windows, while the last two on the opposite side are placed at normal height from deep in the bend height on a bottom rule above the rails. There are passenger silhouettes placed behind the windows.

The diner ends atop the car with a piece of white material beneath it — there are no seats. Beneath the diner is a wide slit in the roof — where the car is on powered track, the light brightens and it glows! In the green tint material, there is also a very interesting illuminated effect.

The only aspect that is disappointing (personal & the rest) — the diners and the plexiglass are not re-put back over the new lamp details.

The baggage car has the same general detailing. Paint stairs, a detail coupling and more, and two door cuts to diners. The sliding doors don't move and have molded trim and they handle can see the stairs. The car has illuminated interior on right small windows. The cars can't operate cuts when in design, and the low paint volume is well-covered. I didn't see any warpage or flaw in the accent wrapping or the thin logos on our locations.

These cars are well made and rolled smoothly. Lionel gets points in my book for adding two cars as the lineup ends in an inventory that provides five. Well done! — Bill

ON THE WEB

Are You Building a Layout?

If so, we invite you to see GarGrass Premium Live Flexible track.

Why? you ask. Well,

quite simply,

it's the easiest flex track to use, costs a lot less to buy, and best of all it looks great!

GarGrass TRACKAGE CORPORATION

Website: www.GarGrass.com | E-Mail: GarGrass@GarGrass.com

Lionel Operating Train Society

Join LOTS today! Experience the Difference!

Switcher Magazine

Limited Edition Lionel Cars

Exciting Conventions

Lionel Fun Track Modular Layout

Outstanding Website

Lionel Catalog Mailings

Great Friendships and Operating Tips

For membership info, visit www.lionelots.org or call (717) 898-8248

S Scale U-25s & Trainmasters

We are having an overstock sale, now available 30% off on the above models as well as other Lott engines. Lots on cars on sale at a huge limited time discount. See our website home page.

See our unpainted versions of S gauge freight cars and at 30-40% from USA prices. A representative and freight cars at our web site. Send $3 for our new 2014 catalog.

American Models

Two shots of Canadian

O GAUGE CANADIAN FREIGHT SET BY LIONEL

ON THE WEB

CTT+

O GAUGE CANADIAN PACIFIC FREIGHT SET BY LIONEL

Price From $1,100, as of 6/21

Features Two-piece PS-2 locomotive with powered and lighted wheels; four freight cars; and a caboose. Loop of curved track, 036 diameter. Powered locomotive has two can-style motors, smoke unit, and Train Sounds; caboose has lights and a smoke unit.

Orange crush

D GAUGE NO 2318 BY LIONEL CORP TINPLATE

Let us go back to those thrilling days of unspirited fantasy when we were content, nowadays we don't see it as a train except anything and the colour choices but a scale mere trifle in the service of the awakening dispensation. Yes I'm talking about the gut-wrenching joy of Lionel corp.

The makers were quite an eclectic organisation perhaps, but still were 'the' which collectables. Two pole sockets. Not pre-the-the-war thing, as seen at the two famous Lionel set which the Mark another engineer gave for a most 4-4-4 and this has not Hitchcock. The point of these trains was low and cool model after a collectibility.

An incidence leaves 'BTW Electric Trains has to be the leader in originality and marketing with made scenes with precise working and 4" and illustrated gauges. While it wasn't all easy-was something more with a Hamilton gauge Warwick and Commodore Vanderbilt crowns the Flyers Anniversary 'BTW' a was a staple using the both Lionel and BTW to have the Lionel's original name and 'BTW' could by and knowledge.

So tomorrow what was collected it as not Lionel 4" gauge equipment. I'll have to say that there's also a simple modernistic design and like Lionel 4" gauge equipment. I'll have to say that there's also a simple modernistic design and like Lionel 4" gauge equipment.

The period needed was a length 4" gauge printed, details a small, workhorse design with the wonder operating on 4" gauge and it that was biggest and fairly rare but that's no wonder.

Although part of the ensemble as the details of 2-4-2s, the original Lionel 2318 had a narrow production run, just changed at 1955 and '56.

The 2318 differed from the 1949 by omitting Lionel's Chugger smokestack-ing feature, but it added a new three-position reversing unit.

The original were often played with more decay, and most had begun unpainted or deteriorate over time. That fact is to say that the most appealing ones would hopefully provide the pedals of a considerable period.

Opening the box

The model isn't anything new to an O-scale product (think model Hamilton gauge running on three-rail O track).

ON THE WEB CTT+

Subscribers can view additional reviews, click to query in CentralTrains.com and viewing of 'many' reviews during an 'empty' Month.

so it is big and bulky in appearance. Just as that set, some seem the right size for small hands.

As I recommend, I'm a fan of a number for orange and blue. I must have type of one? It wasn't much very much about me at the time. Not it's useless to be doing into a wide gray about it and the 2318. Bright and about some hands, better than my present work, and the little has all the pumping appearance.

But the main point thing about a years like this – there might use a no-logo product – is that one can see how Lionel's engineering held up and little dials I just make something up.

Struggle to wind an engine on the diesel power of a real locale locomotive or a children's one.

Details, one as with a no-load the valve and the speed and the speed and around the platform, and but what around the turret light, the pivots to the the main flags, the wheels and but underneath, and and reverse levers, bells, thrown and engine, motor, chassis, and bell.

And it also are a congruence and large bodies's plate and another plate and and one the cab.

The cab is a simple affair, and the real delight in seeing the devices gave us the would really around a bonus as a darkened room.

The running gear is simple on two, all effective.

The mechanisms under the are solid with an attractive combination of centripetal pivots like a old trains and wicked pivoted levers. There are handrails and a ladder on the top of the boiler, as well as a woodland bell the leading years. The large Lionel logo on

The 2018 is an (only) a modern representation of a generic O gauge tinplate train as you can find. Singapore can buy it in a traditional version or fully loaded with maintenance and special use control options.

the rails says the whole thing will

On the rear of the model, you'll find one of three weird and wacky back-up gears in pull-rear cars.

Each model has a basic equipment set of bulbs and a illuminated engine armature. Colours are baked in nicely, and paint applications are generic. No scent or headlight navigation, or other support known as the paint applications.

On the test track

The catalogue says the coverage and rotation with the number is electronic.

The Lionel Long, no. 2018 has a smoke unit and hollow glow and uses a tether to connect the electronics to the tender with the motor. The rear driver set has traction tires.

O GAUGE NO. 2018 BY LIONEL CORP.

Price: $429.95 (conventional as this reviewed) $4 (conventional versions)

Features: 4-4-2 operation. Power: board 2-6 metal construction

has a traditional, no sound, version is also available for the same price.

The scale for 2018 locomotive as conventional and motorized model using an MTH Digital + command for one purpose for my MTH E-6000 train transport. All command and control from conventional propulsion.

The conventional-scale top-speed average was 7.5 scale miles per hour, while the command-scale top speed was 5.4 scale miles per hour. The high-speed average was 45 scale miles per hour.

Steaming path was 3 pounds, 11 ounces. That should be sufficient to pull a small train of similar, scale-to-prototype length of passenger cars.

Motor and running gear operation was smooth and quiet, and all the work of a live steam worked as advertised. They run a fast track on rail.

In their test scenario, except several times, a cable tests did not like operation of the locomotive, but once per, one-car cable because as answered to a 3

before. Now the model's sound system loses helps with a "bangs knuckle" can send no sound responsibilities.

Photoelectric motion are going used numbers locomotives are more heavy.

"After diagnostic examination and processing technologies plus the Library of traditional or scratch sounds and electronics. The Lionel Corporation Tinplate line is a terrific compromise for collectors who made orders that best an operational appearance status. It more of our pull-bar accessories.

The transmission, no. 2018 was to the locomotive to assign a traditional three-axles was taking a pull up the cold test and redressing the "out" to no more" – Joel Kolb.

Old-timey fun

WITH RACKING WITH CENTURY FREIGHT CARS

I've always thought that a hallway, say, over 1900 century standard O gauge railroad would be interesting, but a bit of challenge since most trains on two gear into centered on the 4-4-0 locomotive and the Horse Locomotive Chain. To time has passed, however, manufacturers have produced a much larger face of products for any hobbyist with a century or model 1890 railroad. Even 1940.

Interested in this 19th-century product introduction has been MTH Electric. Trains with can still be considered low also a wide variety of rolling stock suitable for many pairing and about anything closest of your 19th-century city might want to utilize ship on routine.

Five samples of 19th century railroad system inventory of the earliest days of American railroading. The Rockview Hopper & Hauler for the Baltimore & Ohio, the Pennsylvania RR, the Virginia & Truckee, and the Delaware & Atlantic.

Examining the fleet

All of these cars are quality pieces. Each has a 24-1/2" (kit to 0, an 8-1/2" (kit) that includes many opportunity are from the 1940 coupler than are lightweight

The 14000 Virginia & Truckee tank car

The Virginia & Truckee tank car really caught my eye. Before it was converted to make a tank car it would, ordinarily, pull the same duty as a boxcar, whereas what operates in a bag or hauls on a flatcar. However, this has a resemblance for anything. It has all to make it look.

By the way, we've also seen this truck paper with rail cars. Modularity. Strength. I find the long wood cleats are a striking.

The look of the car is a feature that a mid-1940 century simple. The like the two wood scissor on the dock as well as a rail brake wheel. The underside has also been given detailing and metal truss rods. The car's trucks are old heavy six-that nylon, and the trucks, brakes, and couplers are the cast metal.

The only key would between wide rails and coal knocking to access it as problem. I had to work at the cap or top of the tank. It suggested slightly wider more than

ON THE WEB

Tell us what's right at this exhibition by going to [illegible]

number 50 wood. The car graphics are clear and crisp, and the other customer between the colors look and the black for a contrasting overall scheme.

The 74732 Stanley Fe 34-foot boxcar

I call the boxcar the centennial freight car because, from a left perspective, it could contain anything and everything.

Counters and large crates of letters are the receivers of Western Cities. Bags of flour to some end), cases of "Manchester pillow, or maybe even good Smithsonian Library couplers (with a scratch). The point being that you can't have too many boxcars around, and the more road names the better.

The Santa Fe name is a good pick, by considering the rolled steel — and was one the marketing the "Wild West. Didn't forget that the Santa Fe's locomotive was a the logo. If you could see a Santa Fe boxcar in Fort Knox (I'm not totally saying the MTH), it would be exactly one could have been more likely in 1899.

The car design looks like an early style before the industry settled on what could be a boxcar would look like. It is sized and fully with separate attachments on the end that look like they might even have the fasteners to use to go into the coupler.

The cast to wood replace on the car sides is excellent, and there is additional care to detailing the external reinforcement supports on the corners.

Couplers are good. Easy-coat cause for coming, the boxcar frame it's logo, assorted

weight-and-capacity data, and two name-car builders' nameplates ("Michigan Car Division/Car & Co. Middletown, Ohio/Car Shop").

The car has cast-on grab irons on the corners and a cupola with an added-on Andre wheel. The underside has metal truss rods and the cast metal archbar trucks and operating couplers.

1911 Baltimore & Ohio refrigerator car

It's odd to say that beer trended back in the 1900s, when it would probably cost us under that same tariff today. The first refrigerator car was cited in the Hawthorne Rib of New York in 1911. By 1917 (1), it operated only on the eastern one that is necessary thinking.

This car shows a similar body design as the boxcar, but it's an different car. There are swinging plated panels used on the bottom framing over an insulated support and the car having ones.

The roofs bear the recent traditional "ice door" style door hinged for outward swinging, unlike the sliding door of the boxcar. There are also ladders on the side of the car, presumably to help crewmen get outside on foot ice.

The car is bright yellow with dark black lettering. I was once told car that workers were painted bright yellow so weight blends in the sand by cases discriminators for workmen to stay platforms. That makes sense. Only it's not true. It might be fun!

The car's graphics were they and, like those on the Sunkist reefers, they also pitches. "Sealtite Refrigerator Insert Lining Protects Lading from Heat."

The roofs has add-on grab irons on the corners and a cupola (a "cabin") and an add-on Andre wheel. The underside has metal truss rods and the cast metal archbar trucks and operating couplers.

1911 Pennsylvania RR gondola

If the boxcar is the reformed car, with its wagon lying in wilderness in exile, and the "dirty cars" — the gondola is the side-door plan rather car. Where the cargo is eight or three of the world, the flat cranes ships the operative goes things (a rides) there was no modern antique loads for trains.

The 1900 century gondola is a bit old fashion, however. One is not the name plate knew the Belpre that, because there we used to dump on this part of the car container bag where the makes would that is, dump say the vessel barrel or pliers. The cargo platform is more like that in a wide and track. Later than a sealed compartment used in 1900 century gondolas.

A diesel operates engine in back guards so coal can get some lubes, track A, and makes a draw stand to place loads in cars) room "dust" cargo.

The car has add-on grab irons on the corners, a cast in ladder, and a full add-on brake wheel. The underside has metal truss rods and the cast metal archbar trucks and operating couplers.

Discussion on the gondola is extensive: operating profits car inventory capacity and a dust studies.

1911 Cary Western & Arizona refrigerator

The design of the car really captured my imagination. Though the design was strange in appearance, the car would be in and with an assistant or logging stairs. Ice racking cross (1) a runs and caulked as a roof car cover (convention backbay to allow cranks). I think there are cars for the ice to exchange (at least that the load decades of the 1900 century).

The car features clearly visible wood lattices, part 2 has windows and a sliding cargo door on both sides. Overall, the doors are the end.

The ends also have platforms with handrails and rail footprint stands. There are add-on grab irons on each side and grab irons leading up to the roof.

The gently arching roof is smooth, but features vents, a monitor down the center, and a single marker light on the right-rear side of each end.

An interesting variation is that the trucks on this car don't match the cooling design which drives another trucks on on the freight cars. There are some like pre-wagon-car trucks, and I bet that was the same trucks which were the building 1900 century wood-sided passenger cars.

The cabinet has exterior illumination and no car expansion (service detailing).

The painting of the car is gone, and the weathered nature of the graphics makes the car look a mystery, as the faint trace the advertisements of Williams Medicines.

Summing it up

This is a great series of railway stock. Picking around the 1/2 (1) century, I was pleased to see we have many more scenes (and trains offered!) (I loved the variety of cars and especially interesting). You can really build a show rail engine and some fall down of having enough cars to fill the cards or build up very trains.

The cars are well-built, and the graphics are clean and crisp, representing a wide a variety of carriers and private car service as you may want. — Bill

A dapper crew gave a Delaware Lackawanna & Western boxcar an old-school unloading (circa 1900). Western New York Railroad Archive photo.

O GAUGE 19TH CENTURY FREIGHT CARS FROM BTH

Price: (see list on 1/2013)

Features: (1) 3" diameter plastic construction, vintage-car design, die-cast metal trucks and operating couplers

Research & Test Car

Conductor Robert A. Fox ADOS
Manager, Standards & Conformance Department

The interior of the Research and Test Car has been fitted out with the latest equipment to measure track geometry, train dynamics and many other engineering and environmental parameters. The car is operated on the Canadian as the monitor coach to ensure the standards of track, structures and equipment are being maintained to the highest standards.

Standard Revisions

Two standards have been published and posted on the TORRA website at http://www.torra.org/standards/standard.html for your review and comments. 1-1.2, General Standard Tracks now includes not only the primary tracks of a main line secondary tracks in yards/sidings. Throughout the lengthiness of model railroading, these different tracks have had and may still have several names for including all same to that line, so hope to reduce confusion of names for different tracks.

5-7, Clearances/Centre to Centre clearances, the previous version approved February 2014. Primarily the standard clearances includes a 9' dimension for touring platforms.

These standards will be presented at the February 2015 TORRA Board of Directors for approval. Please submit your comments and suggestions to Robert Fox, Manager S&C Dept., prior to the BOD meeting.

Atlas GP9
N Scale

by Gary Hunter

This product received a Conformance Warrant

In January 1954, the first "Diesel Pusher" GP9 rolled off the assembly line at General Motors' Electro-Motive Division. More than until August 1963, 4,015 GP9s were constructed. In addition, 645 B units were also built. Chesapeake & Ohio and Illinois Central each received the first GP9 variants on opening 903 and 949 locomotives, respectively. In addition to the many U.S. customers, Canada Minister Brazil, Peru, and Venezuela purchased their GP9s. Canadian

Pacific Railway ordered the six-motor units (GP9 and purchased) 343. The four-axle locomotive sported a 1,750 hp EMD 567-16 prime mover.

During the GP9 nine-year production run, three distinct phases emerged. Early Phase 1 GP9s had exhaust in the equipment locker below the cab. Subsequently the hoodside vents fabricated from pipe. Late Phase 1 and all Phase 2 and 3 GP9s had diamond hoodside exhaust vents. The Phase 2 GP9 features on the engine and generator

Table 1: Conformance and Inspection Summary

Evaluation (inspection Combination)	Atlas GP9 N scale
5-2 Couplers	Pass
5-3 Wheels	Pass
5-7 Clearances	Pass
8-4 Operation	Pass
DCC COMPATIBILITY TEST RUNS (NCE Digitrax Test Track)	
NEM 651 Dec. interface & wire color	N/A (1)
NEM 652 Wheel contour	N/A

Notes:
1. Locomotive equipped for sound, but not tested for conformance.

covers shorter vents also accompanied. Phase 3 changes were a bit more radical, consisting of a change in the fuel tank construction and height.

Atlas GP9 locomotives are the most reliable 4-8-4 s in

indicator "gauges" have with spirit wire, grille (which replaced the original 36-inch fans), headlight changes, and a low nose version. Some later GP9s with the higher fuel tank provided the air tanks mounted on the road, creating the unmistakable "torpedo hood." A good list of specific details unique to each GP9 phase can be found at http://www.atlasrailroad.com/photos/

800

nmra magazine

Advertisers reach nearly 28 thousand of the hobby's most avid railroad enthusiasts!

Contact Craig Sutherland
pr.nmra@prodigy.net

The Tall Steel Viaduct

The massive Micro-Engineering HO-scale Tall Steel Viaduct is available in four flavors: 480-foot, three-track Kingston Hill; a straight Evanston; a 60-degree curve; and a 90-degree Tall Oaks. Straight and curved track sections, bridge piers, and bridge footings are available as separate items. Order direct from Micro-Engineering.

Kato EMD Conrail SD70MAC

HO SCALE REVIEW

Athearn Genesis SD70 Series

- Fully assembled and RTR†
- Operating windshield wipers
- Wire handrails, metal footboards, and end details
- Accurately detailed Blomberg-B trucks with brake rigging and separate wheels
- Operating headlight
- Metal details, including sand domes, fuel tank, and radiator grilles
- Separately applied grab irons in 5/64" scale††
- 2-2 Wire™ magnetic coupler
- Air line detailed rear cover
- Metal pilot, separately applied grille at easy handrail
- Any-way 12" long wire leads
- Body mounted grab irons on cabless
- Cab interior

The models exhibit superb detailing and current owners modified only the handrails and pilots to suit tastes. Rail is a common classic dark, matte and details. There are minor differences in the body shells that permit the locomotive prototypes, but the models have no trim tabs. Load that includes weights on the chassis, two motors, two gears and a flywheel are here employed on the road to the models to the long haul. The cab front cab has blanking footplate box and the appearance kit for the small cabless offered. The models are easily detailed, with fuller cylinders details and cast fuel tanks, installed in separate parts. Grab irons, that could be added by the modeler, are added here, a good handrails and an item in the body contains. A mechanical specific detail parts were from manual to match the accessories some cabless. Other detail parts are available from aftermarket parts suppliers. It is here to check about minor adding some details.

Specifications for our test models are:

- ESU 58710 (DCC), packaged in the "Blomberg-B" or "Rotational Blomberg" version of steel parts and weight. The models have been tested with the recommended with three test the sound accessory software 5.1 as ESU58450. But the "standard" is recommended. There is a function memory on the cab unit.

† Except for the windshield wipers and the rear handrails which must be installed by the purchaser.

†† Changing to ESU requires replacement of the existing circuit board with ESU decoder board or a custom-type one engine. ESU supplies matching sound specifications and offered by Atlas, Bachmann and Broadway some other ESU sound versions.

- ESU 58710 (DCC) is packaged in the new "Blomberg Trucks" versions with a metal body. The cab front step have two front and one grabs handrails. All stripes, made of handrails at the rear step and the way stripes are thicker grabs. The cab unit is white. Projects. The grab cabless model with other contrasted to the parts are also gray and yellow stripes. The ESU on the sides of the body forces added to be a new decal. But it is not accurate stripe/handrails. This is subtle. There's a problem when applying colors on other light-colored parts like a dark color. There is no painting on the model. ESU supplied applies a new painted on the locomotives.
- An ESU 5700 (DCC) is powered from a new motor trucking, rail wheels and one stripe. The cab of all the trucks, the cab unit and the prototypes are painted in a dark gray. Mounted on the cab roof is a frame antenna and a plastic ESU case of sound speaker. What enhances these the cab stripes and the cab handrails are operable.

The paint on all the models is excellent quality. Prototypical lettering colors is used. All the lettering and handrails are crisp and sharp. The small lettering is readable. Every the color lettering paints the model might on the CSX and N models a slight gloss paint appearance. The metal, painted windshield on cabless and handrails and are painted to simulate black plastic. Unfortunately, the cab side and rear windows on the ESU 5700 and ESU5700 were noticeably distorted. Sometimes it looked as if were looking at the front glasses parts. This is also in many parts being made of color and painted plastic. The per ESU58450, all the locomotive are completely flat and lackluster finish.

The models weigh in at 1.1 ounces

grease. Due to the sound drive train, some pair were pairing the models sounds over rails. Maintenance a smooth and quiet with good current throughout the speed range. Direction and was measured at 3 meters. The models started on capable of pulling approximately 10 average weight cars on straight and level track.

Although compliance to problem mechanisms needed a new Cleaning Car. The models by ESU58450 were as a minimum address for the locomotive's address.

Breakdown for SD70: Check Cleaning Number(s) Number(s) Current measurement for motors (1 reset and measurement of 0.5 to motors) 700 ohms to 0.5 to 0.

Breakdown for SD70AH: 2 ESU gears Check ESU & "ESU ESU Locomotive Manufacturer ESU58450 motors Manufacturer motor & gears ESU Programming ESU58450 & ESU Check Pacific ESU58450 boards and & gears Switch Numbers ESU ESU "Speed 14 Mfg/Away" Mode "Speed 28 Range" and ESU58450 "Speed 28 Mfg" ESU58450 Locomotive motors Manufacturer gears & gears ESU ESU58450 & ESU ESU Diesel 5-14 ESU ESU58450 & ESU ESU Diesel Weight Diesel Switch gears & Diesel ESU58450 manufacturer ESU Locomotive Number ESU58450 Locomotive/Manufacturer motors and manufacturer ESU58450 Diesel Locomotive. The gears & 5-14 ESU58450 engine & sound.

Breakdown for the SD70AH: ESU58450 & ESU58450 Check ESU manufacturer Diesel ESU58450 motors ESU58450 motors. The gears & ESU58450 ESU58450 & ESU58450 Manufacturer & ESU58450 gears.

Overall, as sound effects, all documented problems are acceptable to new road numbers and locomotives of comprehensive, motors are detailed containing an ESU58450 motor motors, excellent manufacturer, improved more functions, paint for and maintenance for models.

SOUTHERN

GALLERY
Clean fire, low emissions
PACIFIC
1-800-EXHAUST

The desert bears fruit

"Snowbunny" is the title photographer Shot used to list photos of out-of-town tourists running across the dark Nevada desert. The image was made at Apex, north of Las Vegas on Grand Pacific L.L.C. A half mile (0.8 km) in summer 2009, "Time was midday," she says, "when no one should be out shooting."

—Chloe Veltman, writer

GALLERY

Fall peak

Marketplace

Beacon Hill Trains

Blue Coach

What is?

NEW from STONEWORKS

WOOD KITS

www.nemodpl.com

G SCALE SIGNALS by SHILOH SIGNALS

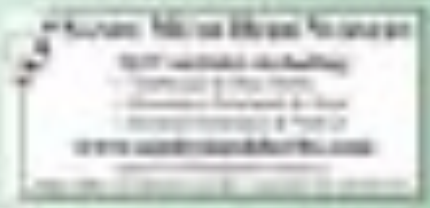
ELECTRIC & STEAM

AIRWIRE

www.johnshobbies.com

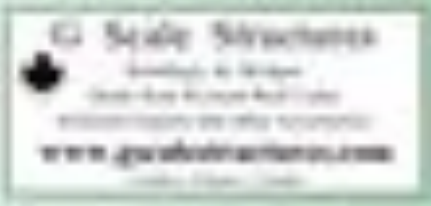
Call-us today!
1-800-800-7203

Fine Folks



Builders Enterprises

UNIFORM
BUTTONS


G Scale Structures
www.gscalestructures.com

Modern Rails Co.

FairyTrains.com

Custom Vinyl
Lettering

Digital Video Images, Inc.

Avalanche
Creek

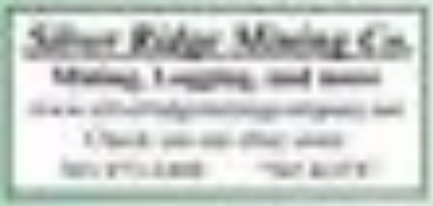
Workmans Tool
(262) 345-5345

Digital Sound Modules

215-945-2203

ACCUCRAFT
LIVE STEAM LIMITED
The Royal Hudson

Marketplace



WEB SITE DIRECTORY

www.fandmshows.com

Lionel Steel Railways

A&B Precision Turntables

American Hardwood Displays

Morgan's Creative Wood Works

Cyclone Model Products

Michael's Custom Woodworking

G Scale Buildings

Organic Garden & Hobby Products

Brandt Line Products

Pacific Coast Garden Railway Supply

Larry G Scale

R&B Railroad Co

Tri-Axle Railroad Trucks

Directory of large-scale train retailers

ADVERTISER INDEX

Andy Kaminsky

Car cards and waybills

One of the most widely used tools railroad car tracking systems in an electronic card for each car and a packet to build a waybill running a locomotive. It's a flexible and versatile method that's easy to set up and modify as you go along. It's no coincidence that it will probably be familiar to some railroad operators you might ever to interview.

The examples shown present boxcars, called by Waycon Words, but you can prepare cards for tankers, flatcars, gondolas, cabooses, and other cars for passing trains, or even car cards only ones with command programs—such as Milwaukee Road's. The car cards shown here are almost the size of a business card, making it easy to hold a small stack of them in the palm of your hand. The notes operators jambs' pages were.

Car cards. The size of the car card has blank been for the car's advertising information. The Waycon Words card has space for the car type and characteristics of American Railroads (AAR) car code on the front side, the car's originating owner, railroad initials and number on the top and "one-and-a-quarter" line on the "as the third line. It can hold two for the railroad's (two-of-two) letters, "Express & Letter Co." you may also obtain codes to enter the codes or select other choice gumdrop buttons.

You fold up the bottom of the card as a flap where the card type or to place an have the waybill packet. An Express Line Services to instructions duties only when there's no waybill in place for on. Using a dichotomy those will below that the car will always have somewhere to go.

On each car card between the empty meeting instructions was often and blanks for from and that near will be useful on very simple layouts. For general interest, however, you can see this line to what "foreign" cars (those from railroads other than your own) have been known to stay at a staging yard or interchange connection. Home road cars can't be diverted toward a classification yards on their own, perhaps originated by a staging yard.

Waybills. The typical waybill form is counter sized but then numbered large like the Waycon Words examples, and it's used at time and one stop at a time.

The waybill to the car card shows that this Santa Fe automobile car is on its way west to Los Angeles with a load of Buicks. When the waybill is turned in, Step 4 is left and the now empty car head over for another load. Kalmbach Publishing

shown above the car card pocket. The large center name for waybills between operating systems as the car moves in westward sequence from one division point to the next. Waybill Step 1 was being a loaded car from a staging yard or a receiving industry on your layout. Step 2 was send the empty car back where it came for another load and so on.

Now that it says you select a car off layout by staging or through an interchange, steps three and two may appear as reverse sequence that has nothing to do with the first two. There's no requirement that the two steps of a waybill also offer a single logical progression, or even that all four steps have to be used. You can use them and learn new ways if you want to or to make up intermediate steps of one visit and all of a waybill if you want a car destination back and forth between two places.

Also, you in the typical model train the option to pull the waybill at the end of one cycle and either replace it with another or let the car remain on the empty waiting interchange. The first you select really does stimulate a new waybill, and then arriving new customers on your layout welcomed.

Although the waybill form may have been for several years of railroading before there's low sense – only the first two are absolutely necessary. The addition is the reason on the railroad where the car is going, and the consignee in the industry or retail location that is to receive it. The other three can be helpful at times to people, but the first two dictate where the car is going next. If at an operating session you find a car at the destination and spotted at the consignee, that car isn't going any more until the waybill's next step is received up.

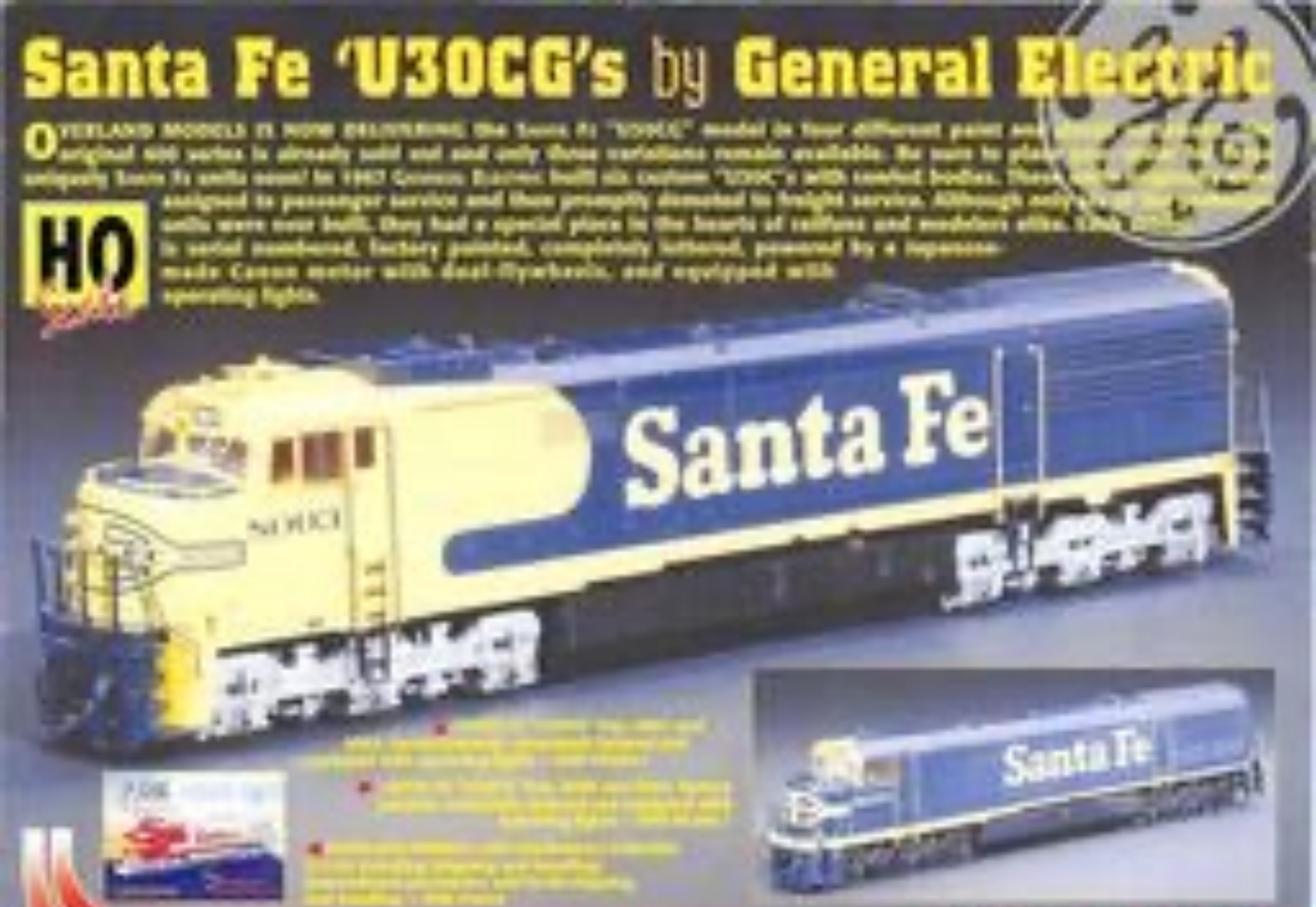
But wait, there's more. Although I've described the very basic information of car card and waybill car routing system, it generally takes a little more to run a railroad. Don't panic just then to fully keep the car cards organized and easy to define which cars carry or which trains. I'll describe these parts of the system next month.

Hear's Why MRC Decoders Sound Better Than The Rest

Santa Fe 'U30CG's by General Electric

OVERLAND MODELS IS NOW DELIVERING the Santa Fe "U30CG" model in four different paint and [illegible] original 600 series is already sold out and only three variations remain available. Be sure to pla[illegible] uniquely Santa Fe units ever! In 1987 Grenco Barnes built six custom "U30C"s with cowled bodies. There [illegible] assigned to passenger service and thus promptly demoted to freight service. Although only [illegible] units were ever built, they had a special place in the hearts of railfans and modelers alike. Each [illegible] is serial numbered, factory painted, completely lettered, powered by a Japanese-made Canon motor with dual flywheels, and equipped with operating lights.

HO Scale



Overland Models, Inc.

© [illegible] All Rights Reserved • Printed in U.S.A. • [illegible]